Exploring New Horizons in Technical Communication

What is a technical communicator? Technical communicators develop and design instructional and informational tools needed to ensure safe, appropriate, and effective use of science and technology, intellectual property, and manufactured products and services. Technical communicators combine multimedia knowledge and strong communication skills with technical expertise to provide education across the entire spectrum of users' abilities, technical experience, and visual and auditory capabilities. For more information visit www.stc.org/about-stc/defining-technical-communication.

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Exploring New Horizons in Technical Communication

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Technical Communication publishes articles in five categories:

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- Case history – reports on solutions to technical communication problems
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Miriam F. Williams, Editor

Exploring New Horizons in Technical Communication

Recent discussions surrounding new horizons in technical communication have often gravitated toward Artificial Intelligence (AI) and its implications for content creation, dissemination, and user experience. Indeed, the winning cover illustration for this issue, which artist DeElla Wiley describes as "generated by AI with human guidance and creative input," exemplifies the intersection of technology and communication that captivates our imagination. The richness of our field's future includes AI as well as a spectrum of themes demanding our attention. In light of this, I posed a simple yet important question to the authors who contributed to this issue: How does your research article contribute to the exploration or advancement of new frontiers within the field, as represented by the theme *New Horizons in Technical Communication* on the May 2024 issue's cover?

Dr. Julie A. Vera, Dr. David McDonald, and Dr. Mark Zachry, authors of "How-To in Short-Form: A Framework for Analyzing Short-Format Instructional Content on TikTok," wrote:

> The proliferation of short-form video represents a paradigm shift in digital communication, facilitated by faster internet speeds and the ubiquity of smartphones. This trend, exemplified by platforms such as TikTok, Instagram Reels, and Snapchat, signifies a departure from traditional long-form production, particularly for instructional video. While YouTube, for example, facilitates detailed instructional narratives, short-form videos can convey detailed instruction in concise and creative ways. This article aims to characterize the landscape of instructional video production and construction, emphasizing the relationship between traditional and emergent formats. In analyzing these relationships, our article contributes to the exploration of new frontiers by calling out the deep roots within traditional instructional media, while underscoring that short-form content can still effectively convey complex instruction within short periods of time. Through this exploration, we expand our understanding of the "new" phenomena of short-form video and provide a framework for technical communicators to apply to existing and future instructional video content.

Dr. Jordan Smith, author of "Determining Levels of Prescriptivism in American English Usage Guides" explained:

> When writing and editing, technical communicators sometimes—perhaps even regularly—find themselves faced with questions of usage that require them to consult style manuals or usage guides to find answers. However, the advice found in different manuals or guides is not always identical. In fact, as this article shows, varying levels of prescriptivism can be observed across usage guides. This article explores levels of prescriptivism in current usage guides relating to American English. While the exploration of prescriptivism is not a new frontier in TPC research, it is one that must be advanced from time to time. As language use and attitudes about language use change, the advice catalogued in usage guides needs to be reanalyzed periodically to help technical communicators understand what advice might best meet the needs of a given rhetorical situation. The findings of this article are intended to help writers and editors engage more critically with the advice they find in usage guides.

Dr. Rich Shivener, Dr Elizabeth Caravella, and Dr. Renee Gittins, the authors of "Heuristics

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for Equitable Technical Communication in Remote & Hybrid Game Development" wrote:

> As with many industries, the COVID-19 pandemic permanently altered game development on a global scale. In particular, the process of generating and sharing technical documents and other forms of technical communication have shifted with the heavy reliance on remote work. This article, then, seeks to address some of the new challenges emerging from said shift, as well as suggest some heuristics to be utilized by these developers in their new (and possibly permanent) remote roles. Furthermore, these heuristics help craft the foundational work necessary for the shift to both fully remote and hybrid work practices that technical communication will now need to encompass for this and other industries. Much like the global work force, technical communicators must forge ahead into this new frontier, with all its positives and negatives. We hope that our piece, then, can help with this process.

Dr. Jeremy Rosselot-Merritt and Dr. Jarron Slater, authors of "The Technical Communicator as Artist: Rhetoric, Aesthetics, and Form in the Workplace" responded:

> New horizons in technical communication can be found in exploring novel ways of explaining the connection among rhetoric, art, and technical communication as applied workplace practice. In "The Technical Communicator as Artist: Rhetoric, Aesthetics, and Form in the Workplace," Slater and Rosselot-Merritt offer Kenneth Burke's rhetorical aesthetic theory of form as a way of contextualizing the work that practicing technical communicators do. Exemplifying their argument through a case study of project-based proposal work in industry, the authors assert that technical communication is a uniquely artistic and creative endeavor calling for deep understanding of communication aesthetics, artistic practices, and what Burke characterized as the psychology of the audience. This way of conceptualizing the applied practice of technical communication benefits practitioners who perform the work, scholars who study the practice, and teachers who prepare students for careers in the field by offering a theory-to-practice model that not only helps explain technical communication work practice, but also advances arguments for the field's intrinsic value and the enjoyment people in the field derive from it.

Finally, Dr. Xiaoxiao Meng, author of "Privacy: Communication Privacy Management Theory Revisited," wrote:

> As data breaches and privacy infringements continue to rise, understanding and addressing these issues are critical. By exploring the practical application of technical theories in mitigating privacy risks, this research offers tangible strategies and insights to safeguard user data, directly addressing one of the most pressing challenges faced by modern communicators. In the rapidly evolving technological landscape, particularly with the advent of artificial intelligence (AI), privacy management becomes increasingly crucial. It coincides with the urgent need to explore new frontiers in understanding AI's credibility, which remains relatively unexplored in the current literature. Additionally, delving into human-computer interaction, particularly in terms of perceived intelligence and efficiency, offers promising avenues for shedding light on user interactions with sophisticated technological interfaces. These ideas represent fertile ground for future research endeavors, embodying the spirit of innovation and discovery encapsulated by the cover illustration theme of *New Horizons in Technical Communication*.

In this issue, the authors present research that requires us to revisit the familiar, such as language usage guides and privacy management theory. Authors in this issue also ask us to consider new ways to do our work and to consider its productive and aesthetic value.

On the Cover
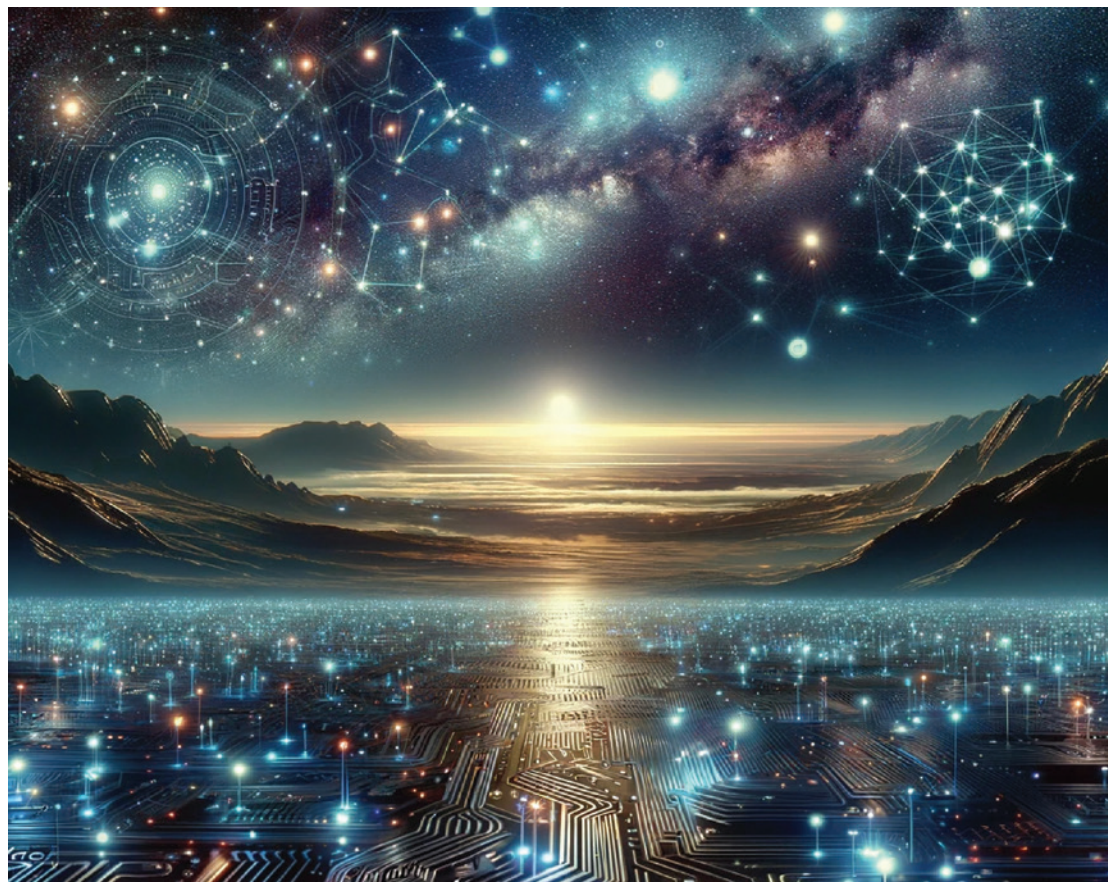
ARTIST'S NOTES

This image, generated by AI with human guidance and creative input, embodies the theme "New Horizons in Technical Communication," as a fusion of artificial intelligence and human imagination. The image, along with the AI medium, symbolizes the innovative, expansive, and evolving field of technical communication. The blend of technology with the natural world reflects the burgeoning partnership between AI and human intelligence, which is at the forefront of redefining the field. This cover art represents not just a vision but a reality where AI, when guided by human insight and creativity, can enhance our ability to communicate complex concepts in more intuitive, compelling ways, paving the way for a future where technology and human expertise coalesce to advance our understanding and interaction with the world around us.

ABOUT THE ARTIST

DeElla Wiley is an Instructional Development Specialist at the Biggio Center for the Enhancement of Teaching and Learning at Auburn University. She holds an MA in English Literature and an MTPC degree and has taught and developed curriculum in English and ESL in community colleges and at Auburn for over ten years. In her current role, she integrates innovative technologies into educational practices, employing AI tools daily to enhance learning and teaching experiences and create professional development opportunities for Auburn's academic community. She is available at wileyde@auburn.edu.

Honorable Mention

ARTIST'S NOTES

In this illustration, there is a visual representation of the earth's horizon symbolizing the emerging horizon of modern technical communication. The image depicts a progression from obsolete forms of media, such as newspapers, radios, and conventional telephones, which are located at the bottom of the image, gradually transforming into more modern forms of media, such as digital devices, holographic displays, and virtual reality headsets, which are located at the top of the image. The pinnacle of present-day technology is represented by elements like satellites, robots, and high-speed internet. This change takes place against the backdrop of a stylized horizon of the Earth, which transitions from a peaceful dawn at the bottom to a vibrant digital landscape at the top. The illustration gives the impression that technical communication has progressed from the more traditional forms to more cutting-edge ones.

ABOUT THE ARTIST

Asebi B. Bofah excels as a Communications Coordinator at Rio Tinto Kennecott, where he plays a pivotal role in enhancing internal communications and supporting Rio Tinto's Safe Production System. Holding an MSc in Technical Communication from the Missouri University of Science and Technology, he is also pursuing an Executive MBA. Asebi's passion for visual design and generative AI is a testament to his commitment to innovation and creativity in the field. He is available at asebibofah@hotmail.com

How-To in Short-Form: A Framework for Analyzing Short-Format Instructional Content on TikTok

By Julie A. Vera, David W. McDonald, and Mark Zachry

ABSTRACT

Purpose: TikTok's rise in popularity has invited creators across a broad spectrum of interests to contribute content to the platform, including non-expert, instructional subject matter. Previously, technical communication scholars have described ways to assess video instruction online, in relatively long-format lengths. Our project outlines a framework for assessing the video production qualities of instructional content across TikTok.

Method: We performed a content analysis of existing frameworks and sets of heuristics for assessing long-format instructional videos. We then analyzed a set of instructional content found across the TikTok platform and analyzed them using previous frameworks. After comparing and contrasting, we developed a new framework for assessing short-format video instructional content.

Results: After assessing long-format instructional video frameworks and instructional content found across TikTok, we found that many dimensions and heuristics from previous frameworks applied to short-format video. Unique to short-form video were the dimensions of *tempo* and *level of detail*, which describe the pacing of the video from a temporal perspective and the fidelity of instruction, respectively. Instruction on TikTok can take place without explicit step-by-step instruction.

Conclusion: We found that many dimensions and heuristics from long-form frameworks carry over to short-form video, but there are features, social norms, and creative norms on TikTok that lend themselves well to "bite-sized" instruction.

Keywords: instruction, TikTok, multimedia, short-form, video

Practitioner's Takeaway:

- There is a wealth of scholarly literature on the topic of instructional content found across the web, particularly on video instruction.
- Early literature on video instruction assessed rhetorical dimensions for assessing the content, such as design, task orientation, and error representation.
- We introduce dimensions that are relevant to short-form video with special attention paid to the level of detail within instruction as well as the temporal structure of instruction.
- Our analysis shows that while many production qualities from long-format instructional video can apply to short-form, there are dimensions that are more important for short-form video, such as tempo and the level of detail in instruction.

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INTRODUCTION

TikTok, the short-form video platform, has seen a meteoric rise in popularity over the past few years. With the primary method of contributing to the platform in the palm of our hands, it is no surprise that 83% of the TikTok user base has posted at least one video (Doyle, 2023). As more short-form content comes online, it is critical to understand how "older" forms of content are being translated to a new, shorter medium. We have seen, over the past decade, a massive shift of content from written mediums to video mediums, especially on the topic of how-to, DIY, and instructional content. YouTube is an example of a platform that has been used widely for instructional content, by both creators and people who require instruction or simply want to learn something new. YouTube has also given increased power to amateur creators. It has never been so easy to record, edit, and upload content for others to see. A creator can choose formal or informal styles of video. The affordances of the platform also allow for conversation to take place, giving space for the social construction of better creations. Historically, YouTube has been the go-to platform to find instructional content on almost any subject. But, how do the production characteristics change when instruction is portrayed in much shorter periods of time? In this study, we investigated what instructional, how-to, DIY, tutorial-like, and other instructional video looks like on TikTok and how we can begin to assess its production features. Short-form video, and TikTok in particular, may have important implications not just for informal learning but also for instructors and content creators who communicate instruction to others.

BACKGROUND

Instructional content has a long history in digital spaces, and much of that content relies exclusively on the content creators, makers, educators, and DIY'ers sharing their knowledge with the public. With how-to content predating digital platforms and formats, mostly in the form of written communication or video lecture-style demonstrations, it is almost an inevitability that instructional content would eventually thrive on social media and social video platforms such as YouTube, Vine, and TikTok. To explore the relevant literature, we will briefly outline our definition of instructional or how-to content. Then, we will address the topic of digital instructional content and early frameworks for assessing efficacy, content, and structure, primarily on YouTube. We will then explore the concept of short-form video and specific affordances available on the TikTok platform as well as modalities that are not available on long-format platforms, such as YouTube. Lastly, we will briefly note some of the more recent applications of frameworks from the era of YouTube tutorials.

What is Instructional Content?

In its most basic form, a how-to video is "a video that gives basic, step-by-step instructions on how to accomplish a certain task" (Purcariu, 2019, p. 65). Bétrancourt and Benetos (2018) spoke of YouTube tutorials as "demonstrating how to perform a procedure such as mathematic computation, hand manipulation tasks, professional behavior, or software operations" (p. 472). Instructional content can also describe another, more nuanced genre of content: the *do-it-yourself* (DIY). Wolf described an array of online DIY content, including material related to home life (home repair, decoration, cooking, and gardening), crafting, personal style and fashion, making and tinkering with computers, and many more areas of niche interests. Although the subject matter in DIY instruction and culture can address nearly any topic, "the common thread is that individuals 'do-it-yourself,' meaning amateur, untrained individuals learn how to do specialized, expert tasks" (Wolf, 2016, para. 3). ten Hove and van der Meij also found a wide range of instructional, DIY-related content on YouTube (ten Hove & van der Meij, 2015). Van Ittersum pointed toward Moeller and McAllister's call to "reclaim the techne – creative, ingenious, tricky, unpredictable, and utterly human," in *Craft and Narrative in DIY Instruction* (Moeller & McAllister, 2002, p. 204; Van Ittersum, 2014, p. 227). From the literature, we can determine that the descriptors of how-to, instructional, tutorial, educational, do-it-yourself (DIY), or explanatory are similar enough to be analyzed systematically. While each term we use for instructional content has nuance, they all attempt to describe a phenomenon: a method of learning. Even from the instructor's perspective, the idea is similar: an instructor, amateur or not, explains an idea, process, or concept.

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Frameworks for Analyzing Instructional Content

The analysis and characterization of video instructional content has roots in many disciplines and modalities, from technical communication to rhetoric to media studies. From a technical communication standpoint, there is an early moment in which we can use to situate our analysis, which begins with the work of David Farkas and *The Logical and Rhetorical Construction of Procedural Discourse* (Farkas, 1999). In this paper, Farkas argues that "not every form of procedural discourse…consists of distinct procedures" (p. 42). The paper outlines several relationships that underlie procedural discourse but does so with the understanding that procedures exist within a social context: Information must be designed with the end user in mind. While the paper largely aims to outline a step model for delivering instruction, we get a glimpse of other social features that exist within instructional contexts, such as the credibility of the person explaining the content or "'selling' the domain itself" (p. 44) as something the user can realistically understand and master.

The following year, Carliner developed a framework for broadening our understanding of information design to serve a more complex organizational and informational landscape (Carliner, 2000). He argued that we must consider broader channels of communicating information (graphics, text, and reader goals); otherwise, information design would simply remain stuck in "document design" mode, which is primarily concerned with text and document appearance. Carliner outlined three levels of information design: physical design (the ability to find information), cognitive design (the ability to understand information), and affective design (the ability to feel comfortable with the presentation of information) (Carliner, 2000). In this framework, video as a *modality* is only mentioned twice—once in relation to the cognitive design of a communication product and once in relation to the physical design.

Post-2000, we start to see a shift in the rhetoric of the internet itself: What was once an electronic connection between two parties for a specific purpose had evolved to become a vast array of interfaces, tools, and networks of people operating those instruments. It is around this time that we start thinking about an all-encompassing rhetoric that can account for the communication of instruction that is taking place in online contexts. Selber observed in 2010 that "what is noteworthy, however, [are] the ways in which the genres of technical communication are being articulated and rearticulated on the World Wide Web" (p. 95). Referencing Miller's work on textual features and meaning-making within sociotechnical contexts, Selber notes, "As the activities and settings of workers evolve in the context of sociotechnical development, so too do the genres of technical communication" (Miller, 1984; Selber, 2010, p. 96). What is also significant in this period of time is how instruction is being approached in different sociotechnical contexts:

> These interfaces no longer position data and information—or people, for that matter—in one context or another. Nor do they care very much about the boundaries the field has used to define technical communication. Although the range of user-generated content is extensive and includes a wide variety of materials (new media and not), instructional discourse occupies a conspicuous position in the landscape of online participatory culture. (Selber, 2010, p. 99)

By understanding the complexity behind the changing contexts, especially as many more people begin to gain access to the internet, we can see the need for descriptive models or heuristics of instructional material. Selber (2010) described a model in which there are "four dimensions in which to imagine the territories of self-contained, embedded, and open instruction sets: metaphors, modes, activities, and emphases" (p. 111). On another axis, instruction sets are described as self-contained, embedded, and open. Self-contained instruction sets are tightly bound, containing unmovable, fixed instruction. At the other end of the spectrum, open sets encourage regular folks to become "authors and editors" of instruction sets.

Starting in 2012, platforms like YouTube are given serious scholarly attention. Morain and Swarts pioneered this topic with *YouTutorial* (Morain & Swarts, 2012) greatly on the levels of information design put forth by Carliner in 2000. In their study, Morain and Swarts (2012) investigate YouTube tutorials in the context of enabling students to become "critical consumers and eventual producers" (p. 7) of educational content, particularly YouTube videos. The authors also indirectly add to the work of Carliner by

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expanding the three-dimensional framework to include points of assessment related to modes (sound and visual information) and rhetorical work (how information was conveyed: explaining, demonstrating, doing).

That same year, Ploetzner and Lowe developed a sweeping survey of the main characterizations of expository animations that have been identified for research purposes. Their analysis identifies 30 different topics in 14 different domains. While not necessarily referring to their own thematic analysis of the topics as a framework, the authors provided a framework for the evaluation and consideration of future work. They found the overarching themes of *presentation*, *user control*, *scaffolding*, and *configuration*. Each theme contains sub-themes that expand it. For example, *presentation*, which was defined as "the fundamental characteristic of an animation is how it presents the subject matter to the learners," (p. 784) contains the sub-themes of *representations employed*, *abstraction*, *explanatory focus*, *viewer perspective*, *spatiotemporal arrangement*, and *duration* (Ploetzner & Lowe, 2012).

The following year, Pflugfelder developed a model for "reconceptualizing a form of short video instruction manual" (2013, p. 131). Using principles from IBM, Pflugfelder argued that designers of educational content should adhere to minimal practices in instructional video; minimalism as a design heuristic is more human-centered and can help both instructors and students in the classroom. Pflugfelder had students assess the content and effectiveness of a "web app" video along dimensions such as language use, task orientation, guided exploration, correspondence, action, entertainment, production, and error representation (Pflugfelder, 2013).

Most recently, in 2015, ten Hove and van der Meij explored a set of 250 instructional videos from across YouTube along an axis of popularity. In their analysis, they found that there are several factors that predict whether or not a video is successful and popular on the platform. Videos with more success tend to have higher production quality, frequent pictures/overlays, more dynamics in terms of static/animated content, short on-screen text, subtitling in different languages, background music, less background noise, and a faster rate of speaking (ten Hove & van der Meij, 2015). Table 1 provides a summary of the dimensions related to the assessment of *long-form* instruction.

The reviewed literature illustrates the evolution of frameworks for assessing instructional or tutorial-like content across the web, particularly via video. This is certainly not a comprehensive overview of all video tutorial frameworks in existence; in fact, we sought out frameworks that specifically were meant to describe video content, not necessarily judge the effectiveness of it or provide heuristics on how to create better video instruction. For this reason, frameworks such as *Eleven Guidelines for the Design of Instructional Videos for Software Training* (van der Meij & Hopfner, 2022) were left out of our analysis.

On the surface, much like Selber (2010) mentioned, very little changes with the use of a framework to understand instructional communication in sociotechnical contexts. People will find new and interesting ways to instruct using the tools available and will combine them with innate human creativity. Fitting with this trajectory, our study explores the next chapter in this developing social trend. Guided by this previous work, we have questions to motivate our exploration of instructional content in short-form, internet-based videos: How can we leverage rhetorical and technical frameworks to help educators reach different audiences with different needs? As communication on the internet shifts toward more informal styles, with ordinary people often supplying most of the instructional content, how might we use frameworks to help "non-educators" contribute their knowledge?

A Short History of Short-Form Video

Short-format video is a relatively new phenomenon. Perhaps one of the earliest platforms to embrace short-format video was Vine, which was bought by Twitter in 2012 and subsequently shut down fully in 2017 (Newton, 2016). Vine was a mobile-only platform for creating micro-video content with a maximum length of 6 seconds. Similar to TikTok, Vine contained features and functionalities such as "Home/Feed," "Discover," "Activity," "Profile," and "Explore." It was also possible to search for specific content using natural language and hashtags (Wightman, 2020).

Since the emergence of Vine, various other media and social platforms have experimented with short-form video, including Snapchat, Instagram, Facebook, and YouTube. However, none of the short-form features in these platforms have approached the

Table 1: Summary of dimensions related to the assessment of long-form instructional content

Author(s)	Primary Dimensions & Short Definition
Carliner (2000)	• **Physical Design**: the ability to find information 　○ Accessibility: Video allows the viewer to focus on areas of the screen that are relevant to the instruction at hand. 　○ Viewability: Production quality (audio, video, text) is sufficient to make content tolerably watchable. 　○ Timing: Video is paced to make it easy for viewers to follow content. • **Affective Design**: the ability to feel comfortable with the presentation of the information 　○ Confidence: Narrator inspires confidence by presenting self as knowledgeable and skilled. Narrator may also inspire confidence by association with a reputable organization. 　○ Self-Efficacy: Video persuades viewers that they can successfully complete the tasks that are the focus of instruction. 　○ Engagement: Video is designed to interest and motivate users. • **Cognitive Design**: the ability to understand information 　○ Accuracy: Content was presented without errors of fact or execution. 　○ Pertinence: Content was related to the instructional goal, and it had an instructional purpose. 　○ Completeness: Content was presented in an organizing superstructure and with sufficient detail so as to be accurately reproduced and broadly applied.
Morain and Swarts (2012)	• **Physical Design** - *see above*. • **Affective Design** - *see above*. • **Cognitive Design** - *see above*. • **Modes** 　○ Sounds: Background, voiceover, FX (system noises, mouse clicks) 　○ Moving/still image: On-screen movement (or no movement) within the frame 　○ Text: Written words, moving or static • **Rhetorical Work** (derived from Farkas, 1999) 　○ Demonstration: movement intended to illustrate a step, not accompanied by explanation 　○ Explanation: instructional talk not accompanied by actions 　○ Doing: illustration of a step, not accompanied by explanation
Ploetzner and Lowe (2012)	• **Presentation**: how an animation presents the subject matter to learners • **User Control**: how learners might be given control over the timeline of an animation • **Scaffolding**: visual or auditory cues to guide the viewer • **Configuration**: how an animation is made available to a learner in terms of setting and ability to execute (or re-execute) the instruction
Pflugfelder (2013)	• **Language use**: did the video employ clear language directing users to perform specific actions? • **Task orientation**: how well did the video focus on tasks rather than features? • **Action**: did the video focus on actions the users could take [with the product]? • **Guided exploration**: did the video offer enough information to allow users to explore the [product]? • **Entertainment**: was the video entertaining and not distracting? • **Correspondence**: how well did the video match up with the audio to show direct relations? • **Production**: was the video scalable and edited to include zooms and pans? Was the audio loud enough and easily understandable? • **Error representation**: how well did the video show an error and how to recover from it?
ten Hove and van der Meij (2015)	• **Resolution**: the number of pixels used in presenting screen objects • **Visuals**: pictorial information in the video • **Verbal & Sound**: presence of audio and written and spoken words • **Tempo**: the pace of the video

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success of TikTok. TikTok is a popular social media platform where users create and share short-format videos via their mobile devices. TikTok has exploded in popularity in recent years. The mobile app was released in 2016 by its parent company, ByteDance (Fannin, 2019). By the first quarter of 2022, the app had 1 billion global active users (Ruby, 2022) and 3 billion total installs (Chan, 2021). As of the second quarter of 2022, it was reported that 67% of American teens have used TikTok (Vogels et al., 2022). Approximately 25% of TikTok content creators are aged 10–19, with a fairly even distribution of users in other age ranges, with an exception of a steep drop-off at around age 50 (Connell, 2021). Approximately 83% of the TikTok user base has posted at least one video (Doyle, 2023).

Like Vine, TikTok contains some typical features that allow a platform like this to grow, including ways of finding videos (universal search), ways of sharing (video embed code, video links, direct messages to other users), ways of signaling (number of likes, number of shares, number of bookmarks), and "sticky" features that enable conversations to occur and keep going (comments, video "stitching"). One innovative feature of TikTok is the way the platform encourages the inclusion of sound in videos. Users are able to search through sounds to find trending sounds (typically new music releases), soundscapes (audio without words), and audio memes (audio that is a sound effect or expresses an idea that is then replicated across many spheres of TikTok content) that add an extra layer of information to create with. Additionally, TikTok users can use a wide range of modifications to their videos, including adding title text on top of the video itself, creating accessible content via closed captioning overlays, using greenscreens, and including videos created outside the platform.

Emergent studies on TikTok and instructional content

Our study aims to capture how "old" concepts like instructional or how-to videos translate into today's social media landscape, particularly on TikTok. Some studies have asked whether TikTok could be used as a tool in the classroom (Middleton, 2022). Recent studies have also assessed motivations for joining TikTok and sharing videos. Lu and Lu found the category of "knowledge sharing" as one area that TikTok viewers were highly engaged with. Videos that

shared knowledge "[covered] one or two key points of certain knowledge" (Lu and Lu, 2019, p. 239). Instructional frameworks have also been used to help describe the technicalities and intricacies of beauty rituals. Chong analyzed popular hair and makeup tutorials on YouTube from the perspective of Swarts' Best Practices (Chong, 2018; Swarts, 2012). TikTok is even used for highly technical instruction, such as instruction related to beginner programmers. Interestingly, it was found that many programming communities on TikTok did not subscribe to more normative practices, such as memetic dances set to popular music (Garcia et al., 2022).

Short-form instructional content, particularly on TikTok, is exploding in popularity. The existing frameworks for assessing instructional rhetoric and its associated production values have not yet been extended to short-form videos. Our study aims to bring established frameworks to the modern short-form video to understand what aspects remain salient in short-form video and what new dimensions must be developed to support this newer but immensely popular type of media format.

METHODS

We collected a set of TikTok videos that met our criteria for instructional short-form video and created a separate set of dimensions that represented aspects that are relevant to short-form. Then, we compared and contrasted the long-form and short-form dimensions, noting new dimensions and those that were no longer relevant. We then derived a set of dimensions that can be used to assess the production qualities and rhetoric of short-form video, particularly on TikTok.

Our framework for assessing short-form videos integrates our knowledge from two sources. First, we examined the literature and gathered the various pieces of frameworks, characterizations, dimensions, and points of assessment that were put forth by previous scholarship. We then examined a body of TikTok content on how-to and instructional topics, and analyzed them from the perspective of how they were utilizing TikTok features to perform the instruction. Noting the differences between long-format and short-format videos, as well as the variations in platform affordances, we derived a set of dimensions for the assessment of short-form instructional content.

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Gathering a Corpus of Instructional TikToks

For this study, we collected the first 50 videos for a set of queried hashtags related to how-to, DIY, instructional, and other explanatory content on TikTok. The extensive number of search results for each hashtag made it difficult to precisely determine the true size of the hashtags using the tools available to us. Given our objective to qualitatively code videos based on their content, we decided that coding 50 videos per hashtag would be a reasonable quantity and provide a realistic, representative sample for each hashtag's dataset. The search was conducted using the TikTok universal search feature, currently found by tapping the magnifying glass in the top right corner. Each video from this set of 50 was screened through a set of inclusion criteria: communication in the English language, a valid URL that resolved to a publicly available, non-deleted TikTok, and adherence to a reasonable definition of "how-to," "DIY," "explanatory" or "instructional" content. We then coded each video for its thematic content and noted other predetermined dimensions of analysis, such as subject matter themes and production complexity. We used audio-visual content analysis to systematically analyze the collected videos (Bell, 2004).

Choosing hashtags

We chose to investigate hashtags that could reasonably accompany how-to, instructional, or explanatory-type TikToks. The authors initially selected the hashtags #explained, #explainit, and #howto to begin the video search, as previous experience with instructional material and the literature suggested these hashtags would be strongly associated with our subject of study.

We defined "how-to," "instructional," or "explanatory" TikToks as "content that explains an idea, concept, or process." These types of videos can also add context to an idea, concept, or process in order to help someone else understand.

Table 2: All hashtags that were considered for our dataset

#DIY	#explained	#howto
#learn	#tutorial	#explain
#explainit	#instructable	#learnontiktok

We ran preliminary searches for each of these hashtags to ensure that the subject matter, broadly speaking, aligned with our definition of "how-to,"

"instructional," or "explanatory" content. Table 2 shows all hashtags that were considered for our final dataset. Most of the content appeared to be explaining concepts, providing examples, showing how to build circuitry, explaining a do-it-yourself (DIY) process, or containing other strong, how-to features. However, not all hashtags were fit for our dataset. The #howto hashtag, for which we expected more instructional-type content, contained a large amount of sexually explicit, non-instructional content. Rather than hunt for TikToks within this hashtag that fit our definition, and risk creating a biased dataset, we chose to remove this hashtag entirely from our study.

Data collection

After conducting a cursory search through each hashtag to ensure that they aligned with how-to content, we turned our attention to systematically collecting TikTok videos. TikTok allows users to search for any string of characters, including hashtags, via the global search feature. Using the logged-in TikTok account of the lead author, we searched for videos that contained hashtags related to how-to, instructional, tutorial, or DIY subject matter. The global search feature returns a list of content, which is divided into several categories, including "top," "users," "videos," "sounds," "LIVE," and "hashtags." We chose to sample videos categorized by the platform as "top" for our dataset. The ranking of the videos appeared to be determined by the number of likes each video garnered. We recorded the URLs for the first 50 videos we were served for this search under each hashtag. This resulted in an initial data set of 400 TikToks related to instructional topics.

Dataset: Inclusion and exclusion criteria

Each TikTok was screened by the lead author as part of a quality assurance check to ensure the video URL was working and resolved to the TikTok domain. We also checked to see if the video was still available and accessible on the platform. Creators have the power to delete videos or make them private at any point; it was important that these links remained accessible to the coding team. We then randomly sampled videos from across all hashtags to scan for any unforeseen issues with the content.

In our initial scan, we found a significant number of TikToks were not conducted primarily in English; because the authors' primary language is English, we

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chose to exclude these from our final data set. Videos that contained non-English captions or additional hashtags were permitted to remain in the data set if they could be reasonably understood by an English-speaking audience.

Each TikTok was then scanned for its content. We removed videos that did not do the work of *explaining*, *demonstrating*, or *doing*. Specifically, we removed any video that *asked* for an explanation of any phenomenon. For example, if a video cataloged under the #explain hashtag showed a video of lights in a dark sky, implying that the video is about unidentified flying objects (UFOs) along with the caption or voiceover "explain it," then this would be considered *asking* for an explanation. Another example of content that did not meet our criteria for explaining was any video that was tagged with #explainit that was more *joking* in nature. A video of a woman explaining that "two plus two equals six" and providing a haphazard, non-serious explanation of why this calculation made sense was not included in the dataset. While we could not directly ask the creator about intent with these TikToks, we can reasonably exclude data that appeared to be nonsensical, insincere, or otherwise asking for engagement.

Videos that were set for inclusion were much closer to the conventions of instructional content familiar to our field, exhibiting a wide range of "traditional" features. For example, a video of someone dancing in slow motion to a popular TikTok song, along with a real-time overlay of the TikTok recording user interface, was included. This video was likely meant to help other TikTok users perform and record the dance on their own, using the "tricks" and "hacks" that were perhaps less intuitive to some users.

Our original dataset contained 450 TikToks. After eliminating non-English videos, those that did not attempt to explain any subject matter, or were significantly outside our definition of how-to type content, we were left with 199 TikToks that satisfied our requirements. A detailed description of our inclusions and exclusions can be found in Figure 1.

ANALYSIS

Developing a Set of Dimensions

We sampled our videos at random to begin our analysis, noting what dimensions TikTok creators were using to get their ideas across. From our initial analysis, we
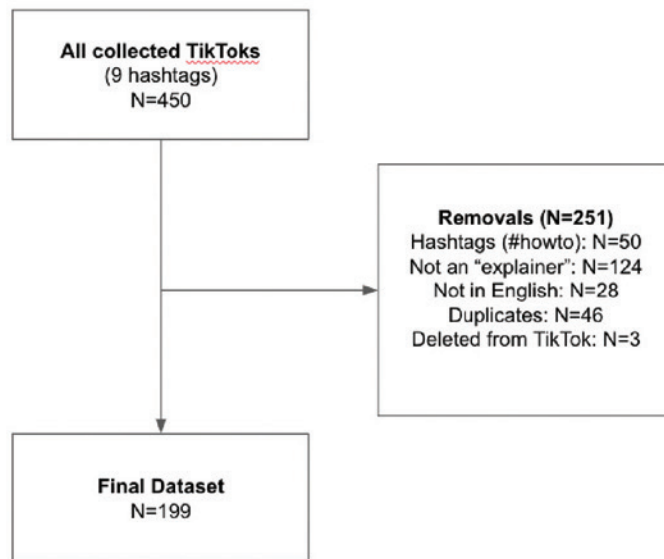
Figure 1: Inclusion of how-to, instructional, explanatory, and DIY TikToks and reasons for exclusion

developed a set of dimensions. We retrieved descriptive information from the TikToks, such as their length in minutes and seconds, subject matter, type of explanation, subject complexity, production complexity, audio characteristics, and overlay characteristics. A detailed description of these content areas is provided in Table 3.

Our final codebook was developed iteratively as we cycled through the dataset, eventually coding and describing all 199 TikToks in the dataset. The primary author coded all videos by hand on each of the content areas listed above in a single coding session per area. The dimensions described above were then edited and modified to add depth and detail. After all the videos were coded by the primary author, two independent coders reviewed all codes to ensure agreement in the code application. All coders met to discuss any differences in coding. Coders resolved disagreements, raised questions, and resolved any differences in codes through discussion and, ultimately, majority rule. Any changes to existing codes or applications of codes were implemented. All coders again met to discuss any questions, concerns, or changes. Based on this iteration of the codebook, along with previous definitions of explainer videos, no TikToks were deleted from the dataset at this point. Videos were viewed multiple times at multiple points throughout the analysis stage to ensure that there was consistency in the coding and interpretation of the videos.

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Table 3: Codebook of dimensions in short-form video

Short-Form Dimensions	Possible Values	Description
Instruction Type	Explaining through Character Acting, Explaining through Interaction, Explaining through Lists, Explaining with Demonstration, Explaining with Outside Video, Watch Someone Explain / Tell Story	How is this TikTok explaining an idea, concept, or process?
Level of Detail	Step by Step, Notional	Does the video give step-by-step instructions or show vague steps to complete a task or learn a concept?
Subject Complexity	Low, Medium, High	How easy or difficult is the subject matter for an average person to understand?
Production Complexity	Low, Medium, High	How complex was the TikTok production?
Overlay Content	Images, Text, User Interface (UI)	What is the nature of the overlay content?
Overlay Function	Advertisement / Attribution, Captions, Illustration, Prompt / Setup, Title Text	How does the overlay content function within the video?
Audio Meme/Content	Voiceover, Outside Content, Song, Soundscape, Ambient Sound	What is the content of the audio?
Tempo	Fast, Intermediately, Slow	The pacing of the video from a temporal perspective

We used audio-visual content analysis to approach the 199 TikToks in our dataset (Bell, 2004). Because of the complexity of audio-visual media, we focused our analysis on what affordances and narrative methods were being used by creators to get the main points across. Focusing on these two aspects allowed us to cover the groundwork laid by authors of long-format video assessments. Having completed our analysis of dimensions from long-format videos, we noted which dimensions these short-form videos borrowed from long-form content. We also paid special attention to dimensions that could be unique to TikTok in particular. The analysis phase was both comparative and generative; while we kept previous dimensions in mind while performing our analysis, we were also mindful of the differences between long-format and short-format video; namely, video length and the use of text overlays, which are normative to TikTok. We approached each video at random and began describing the affordances and ways of going about telling the instructional story, developing dimensions that were appropriate along the way. After reviewing a small subset of videos, dimensions such as audio meme, and the use of text overlays began to reveal themselves. These dimensions were written into a spreadsheet and were changed iteratively as we reviewed a larger number of videos, in the tradition of grounded theory (Corbin & Strauss, 2008).

FINDINGS

We analyzed each TikTok video in our dataset of 199 TikToks that explained or otherwise instructed on any topic. Our findings below are presented thematically by dimension.

Dimension: Instruction Type

We found videos that explained concepts or processes in a range of styles, including explaining through character acting, explaining through interaction (with the viewer), explaining using lists, explaining with demonstration, explaining using outside video, and watching someone tell or explain a story. This dimension harkens back to Farkas' (1999) work, which put forth the dimension of rhetorical work in instructional material. Rhetorical work asks us to describe how instruction is being conveyed. We found evidence of all three types of rhetorical work, *doing*, *demonstrating*, and *explaining*. With the large number of TikToks available in our dataset, and with the wealth of affordances available to TikTok and the video format, we were able to identify more nuanced types of explanations. Table 4 shows each

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instruction type found and their percent representation within our dataset.

For example, videos where one or more subject(s) were acting out scenarios in a movie-like manner, with the camera choosing a slightly different angle for each speaker, were characterized as *explaining through character acting*. Figure 2 shows screenshots from a TikTok in which a creator is explaining how French learned in American schools is often quite different from the French used conversationally in France. This example shows *demonstration* in action by assisting the viewer through a concept with concrete artifacts, both on-screen and within the video itself through character acting.

One video instructed on concepts through interaction between the viewer and the creator. For example, one TikTok relied on the viewer to interact with the video in order to complete the "feedback loop" of instruction. In Figure 3, a TikTok creator uses a set of prompts for the viewer to respond to for the purpose of practicing their English skills. The creator outlines a speaking role for themselves in the red background text and the viewer in the green background text. A viewer can verbally respond to

the green background text to complete the "loop" of instruction. This technique is reminiscent of the types of instruction used in classrooms and language-learning apps such as Duolingo.

Table 4: Each instruction type as a percentage of our final dataset

Instruction Type	% of Total
Explaining with Demonstration	68%
Watch Someone Explain / Tell Story	10%
Explaining through Lists	8%
Explaining with Outside Video	8%
Explaining through Character Acting	5%
Explaining through Interaction	1%
Total	**100%**

Explaining through lists was a distinctive type of video we found in our dataset, demonstrated in Figure 4. Videos in this category used sequences of text, pictures, or another video, occasionally numbered or set to bullet points, to explain a concept. These types of videos were often set to the beat of an audio sound, such as a song by a popular artist or an instrumental track.

Figure 2: A TikTok creator explains French language concepts through character acting

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A small portion of videos utilized outside video, or video that was found outside the TikTok platform, to explain concepts. We used deductive reasoning to determine if the added video was filmed outside the platform. In cases like these, a video was often featured as a small overlay over the creator's video or used as the background for the video. Creators acknowledged the presence of these overlays or background videos in obvious ways, sometimes pointing to where the overlay or a subject of interest is on the screen, so viewers understand what to direct their attention toward.

We found a small subset of videos where we watched creators *tell us a story*. This style of video was quite distinctive as it was often void of many text overlays or supplemental audio. Many creators simply pointed their mobile device camera toward themselves and began explaining a concept primarily through narration.
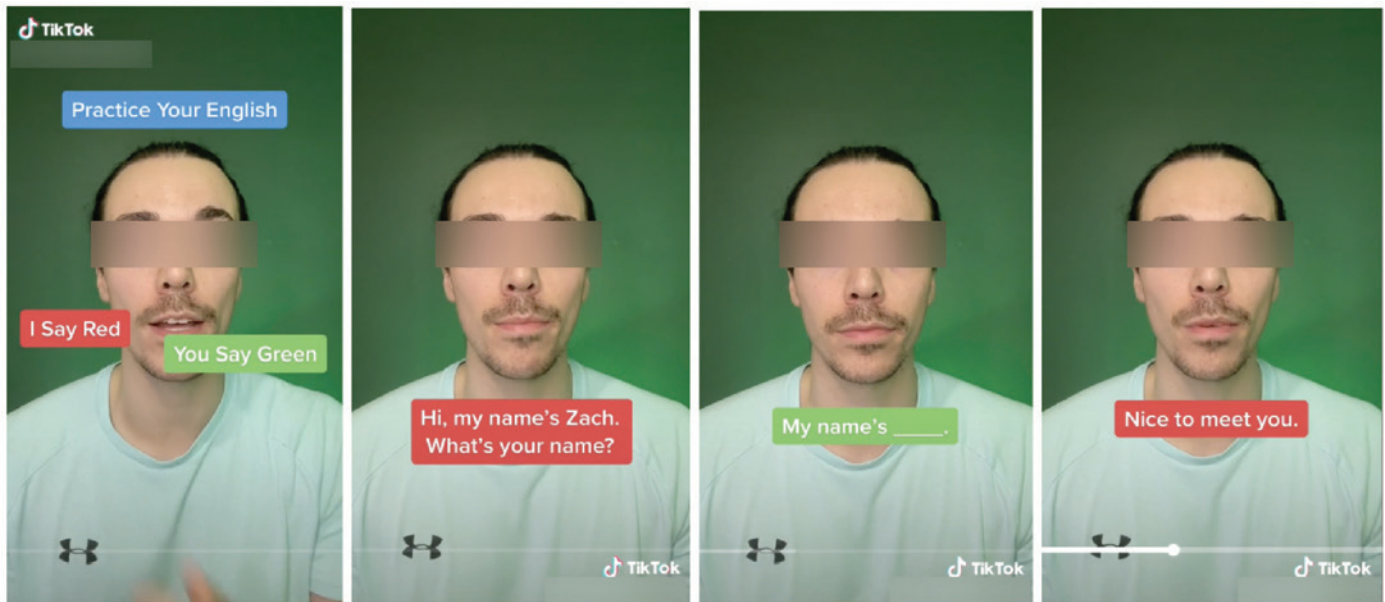

Figure 3: A TikTok creator provides a video to use as a tool for practicing English

Figure 4: A dental health professional explains what colors of braces make teeth look whiter through a picture list of demonstrative examples

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By far, the largest category of instruction type we found were videos that simply demonstrated a concept. Much like the definition provided by Farkas (1999) and Morain and Swarts (2012), these types of videos can be described as simply illustrating a step in a process and not accompanied by an explanation. In Figure 5, a creator demonstrates their process to create a decorative display of a "cyborg beetle" inside a snow globe. In this video, there is no narration or text guiding the viewer to perform any particular steps. The audio in the background is an instrumental song that was popular on the TikTok platform at the time the video was created.

Dimension: Level of Detail

We developed a dimension related to the *level of detail* present in each instructional TikTok. We found that short-format videos could be instructional without a large amount of detail or density of information in the content of the video. Whereas previous authors noted that exceptional instructional content was step-by-step, the instructional content on TikTok ranged from detailed (showing distinct steps, providing text lists, etc.) to notional (little narration, perhaps a series of videos over the course of a long process), or having little detail. Videos were coded as being either notional or step-by-step. This dimension embraces the artistic norms of TikTok and creators often express the level of detail in creative ways. One way to assemble a how-to video is to provide a detailed narrative explanation of a task while providing less informative visual detail, allowing the viewer to focus on the narration. An example of this in our dataset included the restoration of a marble table. The visual information was a series of shorter videos showing the creator having difficulty removing the table's epoxy surface with a spatula. The narration, on the other hand, added detailed explanation of what was difficult and the reasons why the creator decided to try a different strategy with the epoxy removal. Still, another type of video, a more notional one, might provide exceptional visual detail with little to no narration or subtitled text. An example of this style included a video in which a creator reupholsters an old chair. There is a narration at the beginning of the video that explains "Got this old sofa for $20. Loved the shape." The remainder of the video are quick snapshots of the sofa pre-augmentation, materials that went into the sofa such as blankets as filling, scissors to cut the blanket to size, snapshots of a staple gun and threading, spray paint to coat the wooden legs, and, lastly, a photo of the final result. There is, overall, less detail provided. This style can feel quite "dreamlike" and gives the illusion of an easy DIY process.

Dimension: Subject Complexity

We noted the *subject complexity* in our analysis. In this dimension, we asked ourselves how easy or difficult the content was to understand for a non-expert in
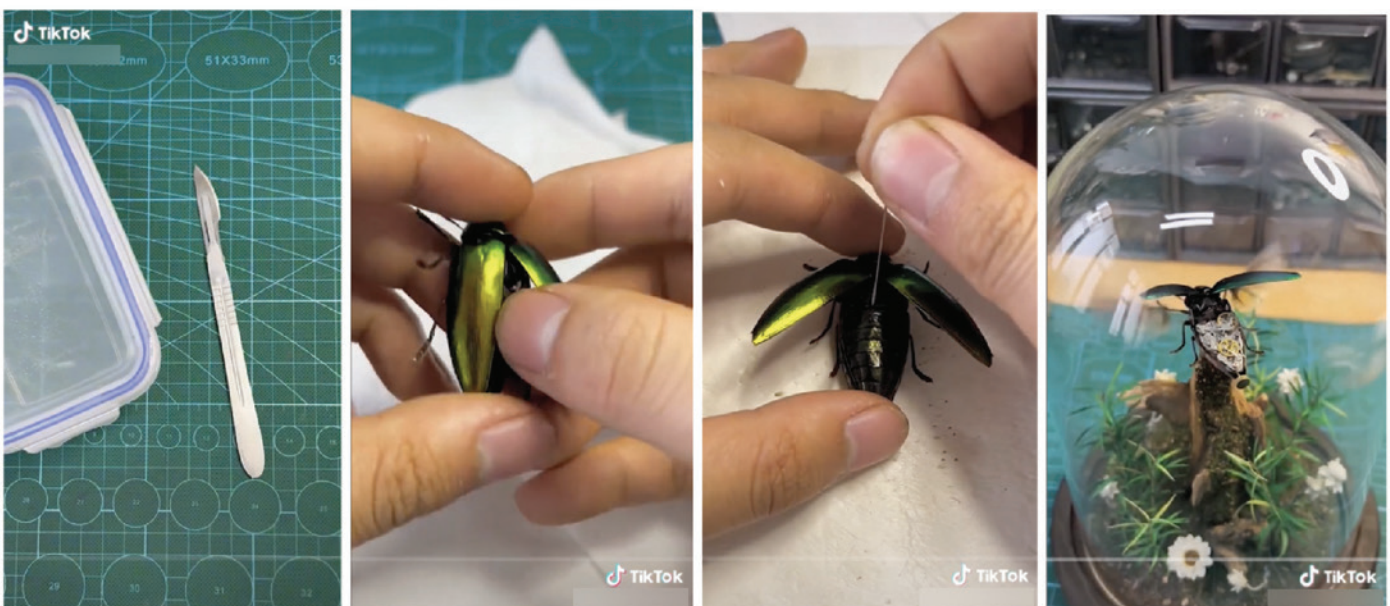

Figure 5: A TikTok creator demonstrates how to prepare insect specimens for a creative display

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the topic. *Low complexity* was defined as content or subject matter that was easy for almost everyone to understand. Little to no outside knowledge is needed to understand the video. *High complexity* was defined as content or subject matter that would be difficult for the average person to understand, especially without some foundational background knowledge of the topic. For example, one video in our dataset was on the topic of explaining stock market "patterns." By pointing at visual patterns on a document and then referring back to another stock chart, it taught the viewer that certain graph shapes on a chart meant that it was time to either buy or sell. There was no accompanying narration and little use of overlay text. A person without knowledge of how the stock market works would likely be lost. We deemed this video as being of *highly complex* subject matter. On the other end of the spectrum, we also saw *low complexity* instruction, though this was less common. One example of a low complexity video was one involving the proper way to shave one's legs. While the video met our definition of an instructional video, it was also quite practical and was meant for a general audience. This video demonstrated that, to get a closer shave, one should "utilize the swivel action" of the razor instead of picking up the razor off the skin. Nearly everyone would be able to understand how to use this "trick" with almost no background knowledge necessary. Table 5 shows subject complexity and its percent representation within our dataset.

Table 5: Subject complexity type as a percentage of our final dataset

Subject Complexity	% of Total
High	50%
Medium	33%
Low	17%
Total	**100%**

Dimension: Production Complexity

Production complexity was assessed for each video on a scale of low to high. In low-complexity productions, a camera or mobile device was usually pointed directly at the video subject. Typically, there were a low number of "cuts" in the videos, or areas where the recording was stopped and restarted, or there was clear evidence of editing within the TikTok app. In high-complexity videos, narratives become more intricate. Cameras moved

in movie-like ways or there were multiple cameras in the production capturing different angles of the subject. These videos also incorporated extra elements found in other content areas, such as outside video or multiple types of audio inputs, such as sound effects and music. There may have also been evidence of editing outside of the TikTok platform, with transitions that would not have been possible from within TikTok itself.

Dimension: Overlay Content

On TikTok, text overlays and closed captioning features are important. We noted any *overlay content* used in videos. As a first step in the analysis, we determined if there was any *overlay content* at all. If so, we categorized the type of content. Some videos used no overlays, such as the example in Figure 6, which successfully conveys a cake baking process We arrived at three core overlay types: text, image, and user interface (UI). UI was used if the video contained any content that showed the TikTok user interface. For example, if a creator was explaining how to do a dance and showed the TikTok UI as part of the explanation itself, this was noted. Image overlays included the use of emojis. Text codes included more straightforward text-over-video treatments as well as special text features, such as closed captioning.

Dimension: Overlay Function

Along with *overlay content*, we also noted *overlay functionality*. We described *overlay functionality* as the ways in which the overlays were helping the viewer to understand the content. We arrived at several codes, including advertisement or attribution text, captions, illustration, prompt or setup, and title text. Advertisement or attribution text was simply text that gave another creator credit or advertised the creator's other social media channels. The illustrative text was text that provided additional context to the voiceover or visuals. Generally, this was text that was thought to carry more weight and do more work than title text. Prompt or setup text was noted as being distinct from other types; this was text that only appeared at the beginning of the video and was meant to orient the viewer to the subject matter. In contrast, title text was understood to be orientation text that occurred throughout the video, as a way to guide the viewer along a journey. Lastly, captions were noted as being distinct; this code was interpreted as text that followed the audio narration quite closely.

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Dimension: Audio Content

We noted any *audio content* in each video and found codes for *voiceovers*, *outside content, songs*, *soundscapes*, and *ambient sound*. *Voiceovers* included audio content such as voice narration by the creator. We interpreted any sounds that were not created or selected via the TikTok app as *outside (sound) content*. For example, a sound effect created outside TikTok and added to a video would be coded as outside sound content. *Songs* can be selected from within the app, and we noted where it was apparent these songs could be linked back to the TikTok music library. *Soundscapes* are similar to songs in that they can also be searched for and selected from within the TikTok app; however, these soundscapes do not contain lyrics and, for the most part, would not be classified as songs one would hear on the radio. These soundscapes can be thought of almost as "bed music" or music that can exist underneath voiceover-type content. Lastly, we also coded for *ambient sound*, or sound that is not specific to any person or song, but simply the sound of the activities going on in the video. For example, a TikTok showing a person sanding a piece of wood with no other audio would be considered ambient sound.

Dimension: Tempo

A primary concern in short-format video is the very nature of its format: there is limited time to instruct. In its current state, TikTok allows some creators to post videos up to 10 minutes in length, with 15-second and 60-second video options as suggestions in the user interface. While some may find short-format to be a limitation, others may find a creative challenge. How does one instruct when there is limited time to do so? We found that *tempo* was important to instructional TikToks but in a different sense than ten Hove and van der Meij (2015) outlined in their work. In long-format frameworks, tempo can best be described as the real-time pace of the video in terms of how much information (e.g., narrative speed) is delivered per a certain time frame. In TikTok, however, tempo is more of a stylistic choice and interacts with *level of detail*: how much information is the creator fitting into a video and what is the balance between visual and audible information. We found that videos could have fast, intermediate, and slow tempos. One video with a high tempo included a DIY repurposing of an Ikea side table. The creator walks us through its transformation from a Scandinavian-inspired, minimal table to a wicker table, fit for a seaside bungalow. However, the tempo is quite fast. Different snapshots of the process are shown quickly throughout the video, although there is a good amount of detail in each. The narration seems rushed and slightly sped up with few natural pauses. We are left feeling informed, yet in need of a pause to take a breath. Other videos can feel rushed in different ways. We encountered a few examples of video that had been sped

Figure 6: A TikTok creator demonstrates how to bake a multi-layer rainbow cake with a story narrative without the use of text overlays

up to remain under the one-minute mark. Some videos have the opposite effect, potentially moving at too slow of a pace. A hallmark of this type of video is one that contains unusually long narration pauses throughout, which adds to the feeling that the video could have been shorter. A closer look at the interaction between *level of detail* and *tempo* in short-form video may be warranted.

DIMENSIONS FOR ASSESSING SHORT-FORM INSTRUCTIONAL VIDEO

Our goal was to develop a framework for assessing instructional content for short-format videos, particularly on TikTok. Keeping in mind the frameworks and dimensions that have been developed for long-format media, such as tutorials and instructional videos for YouTube, we assessed TikToks for the unique dimensions and affordances that supported instruction in small durations. In this section, we outline our framework for assessing short-format video content, which marries the relevant dimensions of long-format frameworks with our new observations from the TikTok dataset. Table 6 provides a summary of our framework

An Assessment Rubric for Short-Form Video

We combined the dimensions derived from our study of instructional TikToks with the previous literature on frameworks for assessing instructional content.

Generally, dimensions regarding visuals and audio were directly translatable to a framework for short-form content. We ported over dimensions such as *verbal and sound* and *visuals* from ten Hove and van de Meij (2015), and *sounds*, *text*, and *moving/still images* (modes) from Morain and Swarts (2012). Audio and visual content were highly nuanced on the TikTok platform. For that reason, aspects of these two elements are both broken out separately (audio meme/content & overlay function/overlay content) as well as integrated within other dimensions, such as *instruction type*. They are inseparable. Pflugfelder's (2013) *language*, or how language directs viewers to perform specific tasks, is present in narration and through the use of text overlays. Ploetzner and Lowe (2012) articulate the idea of *scaffolding*, visual or auditory cues to guide the viewer, which underlies the very concept of an instructional video, no matter the length of the format. The two dimensions, audio and visual, are inseparable.

Table 6: Dimensions for assessing short-format video

Dimension	Sub-Dimension	Derived From	Our Definition
Technical	Production Complexity	Carliner (2000), Pflugfelder (2013)	How complex was the TikTok production?
	Overlay Function	Morain and Swarts (2012)	How do video or text overlays function to help explain or instruct?
Style & Rhetoric	Instruction Type	Farkas (1999), Morain and Swarts (2012), Ploetzner and Lowe (2012)	How does a creator go about explaining something?
	Tempo	Carliner (2000), ten Hove and van der Meij (2015)	What is the pacing of the video from a temporal perspective?
	Level of Detail	N/A	Does the video give step-by-step instructions or show vague steps to complete a task or learn a concept?
Content	Overlay Content	Morain and Swarts (2012), ten Hove and van der Meij (2015)	What is the nature of the overlay content?
	Audio Meme/ Content	Morain and Swarts (2012), Ploetzner and Lowe (2012), ten Hove and van der Meij (2015)	What is the audio content, including song and/or voice narration?
	Subject Complexity	N/A	How easy or difficult is the subject matter for an average person to understand?

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Our dimension of *production complexity* had roots in previous work. Carliner (2000) articulated *viewability*, or the ability of the video to be tolerable. Pflugfelder (2013) outlined *production* as a dimension, which suggested that a good instructional video was easy to watch through its strategic zooms and pans as well as easy to hear through audio editing. All of these are elements of our dimension of production complexity, which takes previous concepts a step further. One can now assume video will be easy to watch and hear, due to the affordances available for editing on TikTok and other similar applications as well as with advances in mobile device technology; viewability and production are givens and, without these basic components, would not be good candidates for the platform. Complexity arises when numerous affordances and features are taken advantage of, which is what production complexity describes: When the basic features are met, what other elements are incorporated that help a user understand the instruction? In more complex short-form videos, we see more intricate narratives, more content ported in from other sources, multiple audio sources, and generally more assistive elements.

Subject complexity is relevant for the TikTok platform as it attracts a wide range of topics and audiences. While we do not make judgments about the subject complexity on its own, it is important to note how a high subject complexity might interact with other dimensions in the rubric. For example, what would a low subject complexity and high production complexity instructional TikTok look like? Would this type of instruction be effective or engaging on a platform such as TikTok?

Much of the rhetorical work from Farkas, Morain, and Swarts (2012), and Ploetzner and Lowe (2012) remained in the rubric in spirit through *instruction type* and *level of detail*. These dimensions aim to capture the how's and rhetorical modes of instructional work. They also point to a very interesting concept on a platform like TikTok—how does one convey information in a short period of time? Creators have devised clever ways to do this. On one hand, information can be densely populated in a short-form video through narration over text overlays, which is still relatively common for TikTok. On the other hand, a video can be more notional, walking someone through a vague but still perhaps reproducible DIY project. Related to the idea of rhetorical work in the context of short-form video is the dimension of *tempo*. Both Carliner (2000) and ten Hove and van der Meij (2015) describe timing and tempo as dimensions to assess instructional content. With TikTok and other short-form platforms, timing is of primary concern: There is less time to get an idea across. For this reason, we felt that *tempo* should be a dimension of assessment in short-form content.

Lastly, entertainment value, while not formally present in our framework, is essential to the culture of content on the TikTok platform. Both Carliner (2000) and Pflugfelder (2013) maintained that engagement was critical to creating good instructional content. While we make no claims about the goodness of the content surveyed, the entertainment value is certainly a primary concern for creators on a platform that encourages vibrant content.

Shifting relevancy of dimensions?

In building our short-form dimensional rubric, we wanted to emphasize the elements and dimensions that remained relevant from previous work on long-form videos. However, there were a number of dimensions that were noticeably absent from our short-form rubric.

For example, video *resolution* was considered an important assessment criterion in ten Hove and van der Meij's work as late as 2015. With ubiquitous mobile devices that can capture video in 8K at 24fps in 2023 (Cyrus, 2023), the resolution is no longer a primary concern for content created ad hoc via a mobile device. Another dimension that did not appear in the final rubric was the notion of *error representation*. Particularly in short formats, *error representation* or recovery may not "make the cut" of content that makes it into the final video. For some content, errors could prove to be humorous, provide entertainment value, and even bolster engagement and sales (Barta et al., 2023); however, we did not find any examples of this in our dataset. One example of this type of sub-genre is exemplified by the TikTok user @sophiena_official. The creator often features videos that humorously struggle with assembling a cooked meal, yet the underlying instruction is coherent enough to pass the instructions on to the viewer. The notion of error representation goes hand-in-hand with that of *self-efficacy* and *accuracy*, which also did not find their way into the short-form rubric. While there are many professionals on the TikTok platform who show and even instruct their

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craft, self-efficacy was not a factor found in the videos we reviewed. Accuracy also cannot be known in many cases, particularly for content that highlights DIY or craft practices. *Confidence* and *completeness*, related to self-efficacy and accuracy, are also not knowable through our dataset.

Some dimensions point toward highly specific types of content that were not well-represented in our dataset. For example, *guided exploration*, which is a dimension that alludes to having a product to explore, was not captured in our dataset. One area where this dimension might be relevant is in so-called "unboxing" videos where users open or unbox a product and explore its features. However, this type of content does not qualify as doing the work of explaining or instructing on a concept. We found the same to be true for *action*, from Pflugfelder's (2013) framework. The idea of action was about shifting the focus of the viewer onto the things a user could do with a product. Again, this was not the orientation of many of the TikToks that were captured in this dataset. In fact, the dataset represented a range that was wider reaching. For example, videos under the #DIY hashtag would not focus so much on what one could do with a newly built piece of furniture for your living room, but rather the process it took to make the piece. *Task orientation* was similar in terms of applicability to the dataset. While few TikToks focused more on tasks rather than features, the lack of formal step-by-step instruction within our dataset made *task orientation* less relevant to the framework.

Lastly, there are long-format dimensions that are relatively standard practice on TikTok, similar platforms, or with video in general. For example, *user control* over media is an expectation that many users would have of most video-based platforms. On TikTok, it is not only possible to pause media to catch up to the real-life delays of, for example, assembling a salad, but a user can opt to download the video if the creator allows it. The *accessibility* dimension from Carliner (2000), focuses on the parts of the subject that are pertinent to the instruction is key, is more or less a norm on the TikTok platform. There is limited time and screen space to attract attention elsewhere. Related to the concern of what instruction is in-focus in the video is *correspondence*, or how well the video matched up to directions, which can also be considered a standard practice on TikTok. A video without synced communication would be confusing to follow. Similarly,

the dimension of *configuration*, which Ploetzner and Lowe (2012) describe as the ways in which instructional content can be made available to a user, was found to be not applicable as TikTok only allows content to be delivered in one way: via short, pausable videos.

DISCUSSION

In our analysis of long-format dimensions of assessment for instructional video and short-format instructional TikToks, we found that there were a surprising amount of similarities between long and short formats. This is evidenced by the number of dimensions that were able to translate from previous frameworks. In this section, we will discuss some of the challenges, successes, and limitations of developing the short-form framework.

TikTok Norms, Notional Material, and the Definition of Instruction

It is worth noting that even in previous literature to outline general frameworks for assessing long-form instructional content, the frameworks themselves were not always comparable or applicable to a wide set of media. For example, Carliner's (2000) model of information design, while applicable to YouTube tutorials as well as TikTok content, was designed during a time of rapid change in information design and functioned as a guideline for workplace communication. Morain and Swarts' (2012) work is focused on YouTube tutorials, where there is a strict definition of *tutorial*. Previous literature points toward long, formal, step-by-step instructional content being a sort of north star—something to emulate. On TikTok, and with a short-form framework for assessment, there can exist a broader definition of instruction. Instruction can be step-by-step, formal, or informal, use audio cues set to a popular song, or rely heavily on text captions. It can also be more notional; it can give the viewer a vague idea of a long process or show a series of complex processes in quick succession. What does and does not resonate with the TikTok audience regarding instruction has a lot to do with the platform culture, which can best be described as informal.

Video Intent and Hashtags

Previous frameworks were quite clear regarding the intent of the media at the center of the investigation. With our dataset, the intent was less clear. For this

How-to in short-form

study, we did not ask creators directly if they meant to create instructional content, or for whom the content was meant. Our next best tool for understanding intent is through the associated hashtags. We searched for hashtags that could reasonably result in instructional content, such as #DIY and #LearnOnTikTok. While many creators use these specific hashtags to make their content more findable, not all TikToks we collected fit the interpretation of the hashtags. A #LearnOnTikTok search could house videos entirely unrelated to the hashtag. This could be due to creators sometimes attaching irrelevant content to popular or trending hashtags. On the contrary, many creators who do create instructional content might not think of their content as being instructional at all. There might still be a portion of creators who mean to instruct but do not use the hashtags that one would expect or instruct hoping for that action to gain a following. Instructional content might be more ubiquitous than we think. One notable example of this type of content would be instruction related to physical products, specifically for the intention of generating demand and making sales. A creator might choose to instruct their audience on how to create abstract art using plaster on canvas but also sell the examples that are created. There is an opportunity to further explore the intersection of demonstration and TikTok video or TikTok Live for the purpose of marketing and sales, as some researchers have begun to do (Orlando & Fachira, 2023; Yang & Lee, 2022).

Part 1 or Part 2?

As TikTok now has a time limit of 10 minutes per short-form video, creators are running into the problem of how to tell a longer story on the platform while still maintaining the attention of their audience. One way to combat viewer fatigue and gain additional views is to break up an explanation or story into multiple parts. For example, a creator can title their first video "Part 1 of 2: Baking a Cake" and the second video "Part 2 of 2: Baking a Cake." From a different perspective, breaking stories into multiple parts makes sense for viewership and follower growth. Creating multiple videos for a single story increases the amount of video real estate that can potentially find its way to someone's "For You" page. In our 199 TikToks accepted into our final dataset, we observed a single video that was told in several parts. The video was a "Part 2" of an unknown number of parts. On its own, the video is still able to

be described by our rubric; however, the choppiness of the story, quite literally not having a beginning or end, can have implications for the dimensions, tempo, level of detail, and subject complexity. For these dimensions, data might simply be incomplete or unknowable. This leads to the next logical question: Are TikToks "in parts" simply long-form content broken up for an audience that prefers much shorter, get-to-the-point videos? The fuzziness of the rubric, when applied to these videos, seems to suggest that multi-part TikToks are more like YouTube instructional content. Ideas are not shrunken down into bite-sized clips but are split to force-fit a long-form style of content to a platform where whole ideas and processes can be expressed in 60 seconds. We suggest that instructional TikToks which occur in parts might be better assessed through the lens of long-form dimensions and rubrics.

Metrics as a Way to Assess?

It is tempting to look at content in a social computing context and assess its worth using visible metrics such as the number of likes and comments. TikTok is algorithmically complex. Videos "go viral" or gain interest rapidly for many different reasons that are often unknown to the creator, much less the viewer. "Good" instructional videos that are tagged appropriately and are otherwise engaging might not see the viewership that corresponds with how well something is explained. We cannot know all the reasons some videos flop and others succeed. Social metrics such as likes, comments, bookmarks, and shares may not be a good way to assess content in this system.

LIMITATIONS

TikTok is not the only platform with short-form videos. Platforms such as Facebook, Instagram, Snapchat, and YouTube have short-form content, though the affordances available to the creator may be quite different. Our dataset is derived from TikTok content and, while many app features may be similar or even the same across multiple platforms, we cannot reasonably consider short-format video, or the assessment of it, to be the same across all platforms. Additionally, each platform has different norms and expectations for short-form videos. For example, TikTok culture has a penchant for memes (Lorenz, 2020). Many TikToks use a memetic structure to stay on top of trends and

solicit engagement. There may be social or algorithmic value in utilizing a trending sound or video filter. We should consider that short-form videos may be limiting for certain types of instructional content. While some concepts can be explained completely in under 10 minutes, many more concepts cannot. For concepts where short-form video is prohibitive, we will likely not see representation for that concept on TikTok. As Pflugfelder outlined, the entertainment value is certainly a factor in keeping users engaged with instruction (Pflugfelder, 2013). Instructional videos that were perhaps far more technical or were otherwise less engaging for a TikTok audience, which greatly values entertainment, may be less likely to appear in the results of our initial hashtag searches. Lastly, we were constrained by not investigating the comments associated with each video. Comments may have allowed us to understand more about the intent of the video and whether or not any effort was being made to provide clarification or further instruction by the creator through the comment feature, similar to instructional discourse on YouTube.

CONCLUSION

In this article, we looked back at frameworks and dimensions that have helped technical communication researchers and educators assess the content, conceptualization, and potential effectiveness of long-format instructional videos. We carried over previous work on assessing long-format instructional videos to a relatively new format, short-format TikTok videos. To move toward a framework for assessing short-format videos, we chose TikTok hashtags and the associated videos that could reasonably describe instructional content and coded them according to their short-format dimensions. We then compared these new dimensions against those that have previously been applied to YouTube and other long-format tutorials. We found that many dimensions from YouTube carry over to short-form video, but there are affordances, social norms, and creative norms on TikTok that lend themselves well to a more notional and less step-by-step instructional design. We discuss the notional aspect of short-form instructional videos and the implications of the exclusion of our selected hashtags within video descriptions. Our findings show that short-form

instructional content on TikTok in particular is worthy of further investigation.

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Determining Levels of Prescriptivism in American English Usage Guides

By Jordan Smith

ABSTRACT

Purpose: Prescriptivism—a concept concerned with "correctness in language use" (Tieken-Boon van Ostade, 2019, p. 8)—serves an important purpose when editors and other language professionals apply the findings from empirical linguistic studies to practical communication tasks (Oaks, 2021). Usage guides catalog usage rules, but they treat these rules with varying levels of prescriptivism. Therefore, advice varies across usage guides. This study empirically investigates levels of prescriptivism observed in usage guides.

Method: Using a scale from 1 (minimally prescriptive) to 4 (maximally prescriptive), two raters coded the level of prescriptivism observed in entries for eight well-known usage problems (e.g., WHO/WHOM and LAY/LIE) from 11 current usage guides relating to American English. Based on the codes assigned to these entries, an overall prescriptivism index was calculated for each usage problem and usage guide.

Results: A range in levels of prescriptivism was observed. Overall, the treatment of usage problems skewed high on the prescriptivism scale with six of the eight being treated as maximally prescriptive by at least two usage guides and six having mean indexes at or above the scale's midpoint of 2.50. Similarly, seven of the 11 usage guides gave maximally prescriptive advice for at least one usage problem and eight had mean indexes at or above 2.50. While these findings indicate a bias toward prescriptive advice, a noteworthy amount of prescription-breaking advice was also observed.

Conclusion: The findings demonstrate that usage guides vary considerably in their levels of prescriptivism; therefore, writers and editors must critically consider which advice to follow.

Keywords: prescriptivism, technical editing, usage guides, usage problems, language ideology

Practitioner's Takeaway:

- Overall, usage advice in the guides I analyzed skewed high on the prescriptivism scale, though a sizable number of usage-guide entries (36.05%) were classified as prescription-breaking.
- Even though usage advice analyzed for this study skewed high, it was still largely inconsistent, with some guides recommending writers and editors follow a rule and other guides recommending they could comfortably ignore the rule.
- Because of this variation in usage-guide advice, technical writers and editors—and the organizations they work for—should carefully consider which usage guides to adopt. To do this, they need some understanding of how prescriptive or not prescriptive usage guides are.

INTRODUCTION

Many English speakers have strong ideas about what constitutes correct and incorrect language use. An instance of *imply* when *infer* is intended, an apostrophe placed before a plural *s*, and the use of *literally* to mean *figuratively* are all examples of usage that, in the prescriptive tradition, would be considered "bad" or "incorrect." This type of usage often incites passionate criticism from self-proclaimed sticklers and sometimes even elicits potent reactions from everyday people who otherwise do not give much thought to language use.

Prescriptivism—a concept concerned with "correctness in language use" (Tieken-Boon van Ostade, 2019, p. 8)—promotes the idea that when a language user can choose from multiple linguistic alternatives to express a single meaning, some of the alternatives are correct while the others are incorrect. Though not all groups of semantically equal alternatives in a language fit into the prescriptive tradition (e.g., speakers of English can express possession with either an *'s* or an *of*-phrase, neither of which are contested in terms of correctness), the previously mentioned examples represent some well-known prescriptive rules: *imply* and *infer* have distinct meanings, plurals are not typically formed with apostrophes, and *literally* does not mean *figuratively*.

Technical communicators encounter prescriptive ideologies in their work, and an increasing body of research in technical communication journals has studied prescriptive rules or topics related to prescriptivism. These studies (reviewed in the next section) have focused on rules that people seem to care about, and the findings from them have informed recommendations for whether and when to follow certain rules. The current study adds to this growing body of research on prescriptivism by empirically analyzing the levels of prescriptivism found in popular, current usage guides that contain information about American English. The findings presented here can help writers and editors understand the extent to which the advice given in the guides varies. Understanding this variation can begin to help writers and editors analyze and evaluate the advice in the guides, rather than just accept it on faith and rotely follow it.

LITERATURE REVIEW

Prescriptivism has been a topic of interest in TPC research and is particularly relevant to copyediting, a task that many technical communicators—writers and editors alike—perform in their work. In this section, I review previous literature broadly related to prescriptivism in TPC research. I then describe prescriptivism's role in copyediting and present the research questions this study seeks to answer.

Prescriptivism in TPC Research

Prescriptivism has been a topic of valuable research in technical and professional communication (TPC) for many years. Jordan (1999) argued persuasively that not all instances of unattached clauses (a typically proscribed feature) are equally bad, and we should therefore "adopt a more accepting attitude toward the less offensive forms of weak or unclear attachment" (p. 88). Similarly, in their study of the use of unattended *this* (another traditionally proscribed feature) in student technical writing, Boettger and Wulff (2014) found the advice to avoid unattended *this* may be less preferable in some circumstances, for example, when delivering bad news. These two studies directly critique prescriptive usage advice. In contrast, Malone and Roberson (2021) argued for following prescriptive rules regarding the mandative subjunctive, suggesting that doing so "serves the goal of stylistic clarity and consistency as well as semantic accuracy" (p. 72). Other studies in TPC scholarship have centered on issues related to prescriptivism such as error correction (e.g., Eaton, 2003; Quible, 2006), botheration levels (Boettger & Moore, 2018; Gubala et al., 2020), and features of linguistic style (e.g., Campbell et al., 2021; Conrad, 2018). These areas of research are related to prescriptivism because they analyze linguistic features of usage or style that some may view as correct (or preferred) while others may view as incorrect (or dispreferred). For example, Conrad (2018) provided a comprehensive profile of the use of passive voice in engineering writing in order to "inform the development of materials that will better prepare civil engineering students for writing in the industry" (p. 66). Her findings, she argued, can help students make "effective choice[s]" (p. 66) about the use of passive voice. Because passive voice is a common focus of prescriptive usage advice, Conrad's study is a good example of how descriptive, objective research can be effectively used to apply scientific findings to practical communication tasks, which Oaks (2021) argued is a useful function of what he called an "informed and measured prescriptivism" (p. 5).

Determining levels of prescriptivism

Prescriptivism and Copyediting

One technical communication-focused task in which prescriptive guidance can be usefully applied is copyediting. When writers and editors perform the task of copyediting, they "[act] as the author's second pair of eyes, pointing out—and usually correcting—mechanical errors and inconsistencies; errors or infelicities of grammar, usage, and syntax; and errors or inconsistencies in content" (Einsohn, 2006, p. 3). Cunningham et al. (2019) suggested that because technical editors work with rules and guidelines, they must be prescriptivists. They further elaborated that because editors "may have some say in which rules [they] follow and expect others to follow," they "should be…sensible and informed prescriptivist[s]" (p. 328). In this way, the task of copyediting inherently involves grappling with prescriptive ideas, but successfully performing the task does not always require copy editors to adopt and enforce those ideas.

It is important to acknowledge that the task of copyediting is increasingly done not only by people with the title of "copy editor" but by almost anyone who writes. This is especially true with the emergence of AI writing tools like ChatGPT, which have been found to reduce the amount of time writers spend drafting while increasing the amount of time they spend editing (Noy & Zhang, 2023, p. 7). As more and more AI tools are adopted into professional writing workflows, writers will likely continue to spend more time editing the output—both on a substantive and copy-edit level—so that it meets the needs of their audience. Indeed, "the necessity of knowing how to edit in the workplace is greater than ever" (Cunningham et al., 2020, p. 2). Therefore, I use the term "copy editor" to refer to anyone who engages, at least on some level, in the task of copyediting.

Previous work in technical communication scholarship has suggested that writers and editors should not follow prescriptive rules uncritically (see Buehler, 1980/2003; Connatser, 2004; Smith, 2023). But why not? What characteristics of prescriptive rules should writers and editors be critical about? In many cases, following a prescriptive rule can be beneficial. For instance, following prescriptive rules can help writers and editors add to a document's clarity and semantic accuracy (see Malone & Roberson, 2021). In addition, a controlled language such as Simplified Technical English has many "writing rules" (i.e., prescriptions) that make documents easier for machines to translate and humans to understand. Furthermore, the prescriptive rules that govern Aviation English allow air traffic controllers and pilots to communicate clearly to ensure safe air travel. And the prescriptive rules that the law mandates in warning labels and other critical communications help to ensure public safety. The rules used in each of these scenarios are arguably beneficial, and a writer, editor, or speaker working in any of these domains must follow the rules.

Prescriptive guidance can also be used to promote social justice. Many organizations have adopted usage rules that prohibit the use of racist, sexist, and ableist language. For instance, the *Google Developer Documentation Style Guide* (n.d.) plainly advises that writers should "avoid ableist language" like "Before launch, give everything a final <u>sanity</u>-check" or "There are some <u>crazy</u> outliers in the data" (underlining added for emphasis). Writers and editors who follow these prescriptive rules help to promote a culture of fairness and equality.

In other cases, following a prescriptive rule may be neither beneficial nor harmful. That is, following a rule may neither substantially improve the clarity of a text nor would it drastically harm the text. In other words, following these kinds of rules is neutral. An example of neutral prescriptive rule-following may be a case where an editor changes all instances of *towards* to *toward*, which Owen (2020) found to be a common change editors make, in order to conform to standard usage advice that dictates the use of *toward* in American English. Such a change may follow prescriptive guidance, but it ultimately does nothing to improve or to harm the text in meaningful ways.

While there are, undoubtedly, instances in which prescriptive rules can be beneficial or neutral, there are also cases where enforcing prescriptive rules may have negative effects. For example, copy editors who mechanically enforce language rules simply because they are supposed to may ultimately hinder a reader's experience. Connatser (2004) identified several prescriptive rules that, when followed, can inhibit a reader's experience. For example, he argued that the oft-prescribed rule to use singular units of measure for any value between 1 and –1 (inclusive) goes against what he terms a reader's "organic grammar" and therefore hinders the reading process. For example, the use of singular *gram* in the sentence "Add 0.5 <u>gram</u> to the mixture" follows a usage rule, but plural *grams*

may be a more natural-sounding alternative for many writers. Writers and editors who engage in this type of mechanical or uncritical following of prescriptive rules can be doing so at the expense of the experience they create for their readers.

More seriously, some prescriptive advice can go beyond inhibiting a reader's experience to promoting "problematic and harmful ideologies" (Smith, 2023, p. 199). Smith pointed to the example of using *he* as a gender-neutral singular pronoun and how doing so "clearly erases those who do not use this pronoun" (p. 199). Ultimately, Smith argued that

> Technical editors must understand and consider [issues related to the harmful effects of prescriptivism] in their work, and technical editing teachers must help their students understand that technical communication does not reveal absolute reality (Miller, 1979, p. 616) but instead functions rhetorically, requiring editors to think critically, be aware of their audience, and make conscious decisions about whether to follow or flout prescriptive usage advice. (p. 199)

In order to consider whether language rules enforced by a copy editor or an organization are harmful, writers, editors, and the organizations they work for need to critically consider the usage advice they adopt. This means examining the usage guides they use as well as the rules they include in their in-house style guides for any potentially harmful prejudices they may promote.

Many novice technical communicators may not be aware of just how much variation exists in usage-guide advice for all three types of prescriptive rules described above (beneficial, neutral, and negative). As I show below, one guide can give advice that runs directly counter to the advice found in another guide. Because of this, writers and editors should know something about the ideologies expressed in the usage guides they follow.

The rules in reference materials that copy editors use, such as style manuals and usage guides, offer a starting point from which writers and editors can determine what is considered appropriate usage in different contexts. These reference materials constitute similar, though not identical, genres. A usage guide "lists the meanings of words, but is not a dictionary[; it] discusses grammatical structures, but is not a

grammar" (Straaijer, 2018, pp. 11–12); and it offers readers "a short cut to the acquisition of habits" that are "acquired, not automatically—through growing up among speakers of the language—but through a conscious educational process" (Weiner, 1988, p. 172). Usage guides are different from style guides like the *Microsoft Style Guide* and style manuals like the *Chicago Manual of Style* because style guides and manuals are "usually designed for in-house use by the organizations that produce them . . . as well as for external writers producing texts for such organizations" (Straaijer, 2018, p. 15) while usage guides, on the other hand, are written for a general audience. Usage guides are different from writing handbooks because unlike writing handbooks, usage guides do not "aim to instruct the reader in various aspects of writing, including the composition and structure of texts" (Straaijer, 2018, p. 15). Prescriptivism in writing handbooks has been studied in previous TPC scholarship (Mackiewicz, 1999). Mackiewicz's work served as an inspiration for this article, but her study and the current one differ in the object of analysis (writing handbooks in Mackiewicz's study and usage guides in this one) as well as the publication dates of the reference works under investigation. All of the guides in the current study—except for one—were published in 2004 or later, at least six years after the most current guide included in Mackiewicz's study, which was published in 1998. Because usage advice can change over time, new studies analyzing levels of prescriptivism in all kinds of reference materials need to be conducted, especially as new reference materials (and new editions of existing reference materials) are released.

Copy editors, undoubtedly, refer to usage guides for advice about contested usage, but it is important to acknowledge that usage guides do not completely dictate the decisions editors make—even when an organization has designated a particular usage guide to follow. Editorial practices vary widely, even among editors with similar training who do very similar tasks (Owen, 2020), and editors do not always follow prescriptive advice, even when it would seem likely that they would (Lukač & Stenton, 2023, p. 281). Pillière (2020) found that a number of different factors influence the choices copy editors make, including the perceived level of formality of a text, whether or not passages appeared in dialogue, and sometimes simply the editors' personal preferences. In the same vein, Mackiewicz and Durazzi (2023),

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in their study of editors' judgments of *they* used as a singular pronoun, found that textual cues influenced editors' decision-making. For example, when *they* appeared with a nongendered antecedent (e.g., "child"), 69% of editors found the use acceptable. But when *they* appeared with a gendered proper name as an antecedent (e.g., "Maria"), 58% of editors said they would query the author to confirm whether *they* was the preferred pronoun, and 13% said they would change the pronoun from *they* to *her*.

Other constraints, such as deciding when to overrule an author's original preference, determining when to maintain consistency within a document or document set, and even the sometimes-arbitrary preferences of the editor or their supervisor, can influence how copy editors do their work. Sometimes an author may want an editor to enforce any and all prescriptive rules because they feel it will enhance their image. In many cases, copy editors are expected—and even required—to follow the rules outlined in their house style guide and the reference materials designated as authoritative by the organization or client they work for. In these cases, copy editors might feel compelled to enforce rules that are contrary to their own preferences or even their own standards because of organizational policies, author preferences, or supervisor direction. Even though they may not have the freedom to deviate from the rules they find objectionable, copy editors should feel empowered to "raise for discussion" (Graves & Graves, 1998, p. 412) rules or guidelines that they may feel are harmful, problematic, or otherwise unhelpful to the reader. In ideal work environments, supervisors will participate in these discussions and carefully consider endorsing the recommended changes. If, however, the copy editors' concerns are not persuasive to those with decision-making power, the copy editors may still have to follow rules they disagree with, but they can take assurance in knowing they did what they could to resolve the issue.

Certainly, many reasons contribute to a copy editor's decision (and sometimes ability) to follow or not follow one or more prescriptive rules. This study focuses on one of these potential reasons: the fact that usage guides exhibit a lack of uniformity in the advice they offer. Some copy editors might assume that the advice in one usage guide would be the same as—or at least similar to—the advice in any other. However, "usage guides do not necessarily speak with

one voice" (Pillière, 2020, p. 258). Algeo (1991) noted that most usage guides are "based mainly upon the author's knowledge and [express] the author's taste and judgment" (p. 6). Indeed, some usage guides are even written by multiple authors under a single editor or several editors. Tieken-Boon van Ostade (2023) observed that some entries in usage guides may not be prescriptive or proscriptive at all but can instead be simply descriptive in which the author provides information about usage patterns but does not offer explicit usage advice. As such, usage guides can sometimes be idiosyncratic collections of the author's (or authors') opinions and can therefore express varying levels of prescriptivism in the advice they offer—if in fact they offer any advice at all.

For some prescriptive rules, agreement among usage guides seems to be widespread (i.e., the degree to which usage guides treat the rule prescriptively is the same). For others, however, usage guides present diverse judgments. When usage guides treat usage rules with differing levels of prescriptivism, copy editors can find themselves dealing with the difficult task of having to choose one guide's advice over another's. Once a decision has been made, copy editors should record their decisions in an in-house style guide or on a style sheet. However, the problem may persist as new usage questions arise—questions that are not already addressed in the in-house style guide. Understanding how prescriptively a guide treats a given usage rule, or how generally prescriptive (or not prescriptive) a usage guide's advice is, can help copy editors make more informed decisions.

In this article, I empirically analyze levels of prescriptivism by answering these research questions:

RQ1: To what extent do 11 current usage guides relating to American English recommend following the traditional rules for eight well-known usage problems?

RQ2: To what extent does the overall level of prescriptivism observed in the usage guides vary when the advice they give for the same eight usage problems is considered collectively?

To answer RQ1, I describe a prescriptivism profile for the usage problems, noting which usage problems are treated most and least prescriptively by the usage guides. To answer RQ2, I describe a prescriptivism

profile for the usage guides, based on a four-item scale, noting which guides gave the most and least prescriptive advice for the usage problems I studied.

Three terms used in the research questions above require definition. *Usage* refers to "actual [language] use in edited and printed American English" (Wachal, 2000, p. 199). *Usage problem* is a technical term (see Ilson, 1985, for an early use and discussion) used to refer to prescriptive rules and the linguistic variants associated with them. The linguistic variants associated with a usage problem comprise "a set of two or more ways of saying the same thing" (Grieve, 2016, p. 38) in which the correctness of one of the variants is contested. *Traditional rules* refers to guidelines that prescribe how the linguistic variants associated with a usage problem should be used. Cameron (2012, 1995) called these guidelines "received ideas" that seem to have no originating source, and Chapman (2017) noted that "prescriptive rules constitute a tradition which valorises rules independent of other benefits claimed for the rules, such as their usefulness for enhancing clarity or elegance in language" (p. 238).

In the following sections of this article, I describe the criteria I used to select the usage problems and the usage guides, and I describe the methods I used to analyze them. Then, I present the results of the analysis and discuss implications.

SELECTING AND ANALYZING USAGE PROBLEMS AND USAGE GUIDES

To determine which usage problems to analyze, I used the Hyper Usage Guide of English (HUGE) (Straaijer, 2014) to identify the 10 usage problems that appear in the highest number of usage guides that contain information about American English. I reasoned that 10 usage problems would provide an amount of data that would be manageable yet still robust enough to allow me to conduct a useful analysis. The HUGE database contains 77 usage guides (44 of which are categorized as relating primarily or in part to American English; the others relate primarily to British English) and catalogs a total of 123 usage problems. Thus, the HUGE database

allows users to easily compare which usage problems are contained in different usage guides and, where copyright permissions have been obtained, to read the entries for these usage problems from the usage guides.

Because the analysis reported here was part of a larger study that used corpus methods to study adherence to prescriptive usage rules in formal and informal written English, I eliminated two of the 10 usage problems (SHALL/WILL and PLACEMENT OF ONLY) because they could not be feasibly analyzed given the constraints of the larger study—either because authentic examples of the linguistic variants associated with the usage problems were infrequently observed (as was the case with SHALL/WILL), or because determining adherence to a given rule would have required interviewing or surveying writers to assess their intended meaning (as was the case with PLACEMENT OF ONLY). Table 1 shows the remaining eight usage problems included in this analysis.

To select the usage guides to include in the study, I identified the 10 most current usage guides coded as relating to American English in the HUGE database (some of the guides I selected, for example Peters [2004], were coded as relating to both American and British English). Again, I selected 10 because it was a manageable number that still provided enough data to conduct a useful analysis. If a guide in that list had a more recent edition than the one in the HUGE database at the time data was collected in late 2018–early 2019, I used the entries from the more current version. Two of the guides that appeared in the list, *The New Fowler's Modern English Usage* (Fowler, 1996, 2000) and *Pocket Fowler's Modern English Usage* (Allen, 1999), had new editions both edited by the same person, so I included only the more comprehensive guide—*Fowler's Dictionary of Modern English Usage* (Butterfield, 2015)—in this study. I also included current editions of *Merriam-Webster's Dictionary of English Usage* (1994) and *The Elements of Style* (Strunk & White, 2009) because of their popularity and influence[1]. Many editions of *The Elements of Style* have been published or reprinted, likely because the book's contents are now in the public domain. The edition I included in this study is the 50th anniversary

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1   In his critique of The Elements of Style, *Pullum (2010) acknowledged its popularity and influence by pointing to its high sales numbers and the fact that "many college-educated Americans revere [it], swear by it, carry it around with them" (p. 34). It continues to sell well with the 24-year-old fourth edition occupying the number eight slot on amazon.com's best-seller list for grammar reference books as of September 9, 2023. While* Merriam-Webster's Dictionary of English Usage *has likely sold fewer copies than* The Elements of Style*, its influence is still beyond doubt. Wachal (2000) called it "the gold standard" "for copy editors and others interested in usage as defined by what regularly gets into print" (p. 207).*

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Table 1: Usage problems included in the current study. The terms are taken from the Hyper Usage Guide of English (HUGE) database (Straaijer, 2014), and the example sentences are adapted from those seen in the HUGE database.

Usage problem	Abbreviated description of the rule	Example sentence where traditional rule is not followed. (The prescriptively preferred form is shown in the sentence in parentheses.)
LAY/LIE	Use *lay* only as a transitive verb; use *lie* only as an intransitive verb.	*She had the tools just <u>laying</u> around. (She had the tools just <u>lying</u> around.)
WHO/WHOM	Use *who* in subject position always; use *whom* in object position always.	*<u>Who</u> did he ask? (<u>Whom</u> did he ask?)
DIFFERENT TO/THAN/ FROM	*different from* is correct. *Different to* is incorrect. *Different than* is correct only when what follows is a complete clause.	*Running is very <u>different than</u> jogging. (Running is very <u>different from</u> jogging.)
SPLIT INFINITIVE	Splitting infinitives is never correct.	*She refused <u>to even think</u> of it. (She refused <u>even to think</u> of it.)
I FOR ME	Use object pronouns in object position and subject pronouns in subject position.	*She told <u>Charles and I</u> the whole story. (She told <u>Charles and me</u> the whole story.)
SINGULAR THEY	*they* is a plural pronoun and therefore cannot be used with a singular antecedent.	*<u>Everyone</u> has <u>their</u> own style. (<u>Everyone</u> has <u>his or her</u> own style.)
LESS/FEWER	Use *less* to modify noncountable nouns; use *fewer* to modify countable nouns.	*There were <u>less accidents</u> this year than last. (There were <u>fewer accidents</u> this year than last.)
NONE IN PLURAL CONTEXT	*none* is always singular and should therefore agree with singular verbs.	*<u>None were</u> left on the table. (<u>None was</u> left on the table.)

edition, which is a reprint of the fourth edition. Finally, new editions of *Woe Is I* (O'Conner, 2019) and *Garner's Modern English Usage* (Garner, 2022) were published while I was collecting and analyzing the data presented in this study (in the case of O'Conner [2019]) or after data collection and analysis were complete (in the case of Garner [2022]). As a result, the editions included in this study for these two works are no longer the most current. I briefly discuss one change from the third to the fourth edition of *Woe Is I* below. Table 2 shows the complete list of the 11 usage guides included in this study.

I acknowledge that some of the usage guides used in this study (e.g., Strunk & White [2009] and Butterfield [2015]) have long publishing histories—in the case of Strunk and White, dating back more than 100 years. The ideas expressed in previous versions of these works may have some influence on the levels of prescriptivism observed in the editions I analyzed, but determining the extent to which this is true falls outside the scope of this study.

After selecting the usage guides, I compiled the relevant entries from the guides into a single Word document to use as a rating sheet. Because usage guides sometimes addressed a single usage problem in

more than one entry (e.g., Garner [2016] addressed the I FOR ME usage problem under entries titled "B. Between you and me; *between you and I," "CLASS DISTINCTIONS," "HYPERCORRECTION," and "PRONOUNS"), I used the HUGE database as a starting point for determining which entries to include in the rating sheet and added other entries that dealt substantively with the usage problems under investigation. To rate the level of prescriptivism of each usage problem, I developed a scale to calculate what I call a *prescriptivism index* for each usage problem in each usage guide. The scale I developed is reproduced in Figure 1. Ratings on the scale range from 1 (the guide rejects the rule and approves of breaking the rule in any context) to 4 (the guide suggests upholding the rule in all contexts). Levels 2 and 3 on the scale could be applied to advice that acknowledges the role context plays in a reader's choice to follow the rule or not. Note that a rating of 1 or 2 is considered "prescription-breaking" while a rating of 3 or 4 is considered "prescriptive."

Two people (the author and a PhD candidate in Applied Linguistics) used the prescriptivism scale to code the data. Neuendorf (2017) pointed out that "often, a

Jordan Smith

Table 2: Usage guides included in this study. Except for Merriam-Webster's Dictionary of English Usage (1994) and Strunk and White (2009), the guides were selected based on data from Hyper Usage Guide of English (HUGE) (Straaijer, 2014).

Author	Title	Ed.	Year
--	*The American Heritage Guide to Contemporary Usage and Style*	1	2005
--	*Merriam-Webster's Dictionary of English Usage*	1	1994
Batko, A.	*When Bad Grammar Happens to Good People: How to Avoid Common Errors in English*	1	2004
Brians, P.	*Common Errors in English Usage*	3	2013
Butterfield, J.	*Fowler's Dictionary of Modern English Usage*	4	2015
Fogarty, M.	*Grammar Girl's Quick and Dirty Tips for Better Writing*	1	2008
Garner, B. A.	*Garner's Modern English Usage*	4	2016
O'Conner, P. T.	*Woe is I*	3	2009
Peters, P.	*The Cambridge Guide to English Usage*	1	2004
Strunk, W. and White, E. B.	*The Elements of Style*	4	2009
Trask, R. L.	*Mind the Gaffe: A Troubleshooter's Guide to English Style and Usage*	1	2006

Prescription-Breaking | **Prescriptive**

\+   −   −   \+

1 | **2** | **3** | **4**

Rejects the rule | **Rejects the rule, but…** | **Upholds the rule, but…** | **Upholds the rule**

Entry rejects the traditional rule…. Entry may overtly contradict the rule (Mackiewicz, 1999). Entry approves of breaking the rule in any context. Entry may suggest (implicitly or explicitly) that the traditional, prescriptive rule is no longer in force.

Entry generally rejects the traditional rule…but still recommends following the rule in certain contexts (e.g., formal writing). Entries that make a distinction based on formality or register fall into this category if they suggest that a person's default position can be to break the rule.

Entry generally upholds the traditional rule…and is predominantly prescriptive but acknowledges exceptions to the rule (i.e., contexts in which breaking the rule is acceptable). Entries that make distinctions based on formality or register fall into this category if they suggest that a person's default position should be to follow the rule.

Entry upholds the traditional rule…and is highly prescriptive. Entry suggests that readers should follow the rule in all contexts. Entries in which the rule is simply stated with no explicit acknowledgement of exceptions fall into this category. Entry may label nontraditional uses with pejorative labels (e.g., error, wrong, incorrect, etc.).

Figure 1: Prescriptivism scale created to rate the level of prescriptivism for each usage problem in each usage guide

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principal investigator of [a] study serves as a coder" (p. 157), which was true in this study's case. While not ideal, "it is a logistic fact of content analysis life" (Neuendorf, 2017, p. 157). The second rater was recruited as part of a "reciprocal arrangement," which Geisler and Swarts (2019, p. 173) suggested can be a good way to recruit second raters. Each rater assigned a value from the prescriptivism scale to the content related to each usage problem from each usage guide in the rating sheet. The second rater was trained before completing the task. Training included explaining the prescriptivism index, reviewing exemplars for each point on the rating scale, and coding a practice set of data. We did not code each individual entry from the usage guides; instead, we considered all relevant entries for a single usage problem from the guides together when coding the level of prescriptivism for each of the eight usage problems. The inter-rater reliability coefficient (κ) of the coding was 0.608, which can be considered "good," according to Fleiss, Levin, and Paik (2003, p. 604). The weighted coefficient (κ_w), which can be used for ordinal data and accounts for nearness of agreement, was 0.706. The percent agreement was 70.93%; the percent adjacent agreement was 94.19%. The total prescriptivism index for each usage problem was calculated by averaging the prescriptivism index from both coders. The total prescriptivism index for each usage guide was calculated by averaging the total prescriptivism index of each usage problem from each guide.

EXPLORING PRESCRIPTIVISM IN USAGE GUIDES

In this section, I present a prescriptivism profile for the usage problems and the usage guides based on the results of the coding. I highlight the usage problems and guides with the highest and lowest prescriptivism indexes as well as those with the most variation in their ratings, and I provide illustrative examples from the guides throughout the discussion.

Prescriptivism Profile of Usage Problems

The results of the coding are shown in Figure 2. Descriptive statistics for each usage problem are shown as box and whisker plots with data points overlaid. The upper boundary of each box represents the third quartile, or "the middle of the upper half of the data set" (Box Plots, n.d.); the lower boundary of each box

represents the first quartile, or "the middle of the lower half of the data set" (Box Plots, n.d.). The whiskers, where present, represent the maximum and minimum values, and the line dissecting the box, where present, represents the median. The absence of an upper whisker indicates that the third quartile is the same as the maximum value, and the absence of a lower whisker indicates that the first quartile is the same as the minimum value. In boxes with no visible line dissecting the box, the median is the same as either the first or third quartile. The "+" inside each box represents the mean (average) prescriptivism rating for each usage problem. Numerical summaries of the minimum, maximum, and mean scores for each usage problem are shown in Table 3.

Table 3: Descriptive statistics of usage problems. The minimum, maximum, and mean values for each usage problem are shown. These values are presented visually in Figure 2.

Usage problem	Min	Max	Mean
LAY/LIE	2	4	3.41
WHO/WHOM	1.50	4	2.64
DIFFERENT TO/THAN/FROM	1	4	2.64
SPLIT INFINITIVE	1	3	1.95
I FOR ME	2.50	4	3.50
SINGULAR THEY	1	4	2.50
LESS/FEWER	2.50	4	3.32
NONE IN PLURAL CONTEXT	1	2	1.45

Taken on average, the usage guides took the most prescriptive stance for the I FOR ME (3.50), LAY/LIE (3.41), and LESS/FEWER (3.32) usage problems with each receiving an average prescriptivism index above 3.00. The NONE IN PLURAL CONTEXT usage problem was treated the least prescriptively by the usage guides with an average prescriptivism index of 1.45. I elaborate further on these findings below.

The usage problems with the highest prescriptivism indexes

The I FOR ME usage problem had the highest average prescriptivism index at 3.50, and six of the 11 usage guides (more than any other usage problem) treated it with maximal prescription: Batko (2004), Brians (2013), Fogarty (2008), Garner (2016), O'Conner (2009), and Strunk and White (2009). Four of these
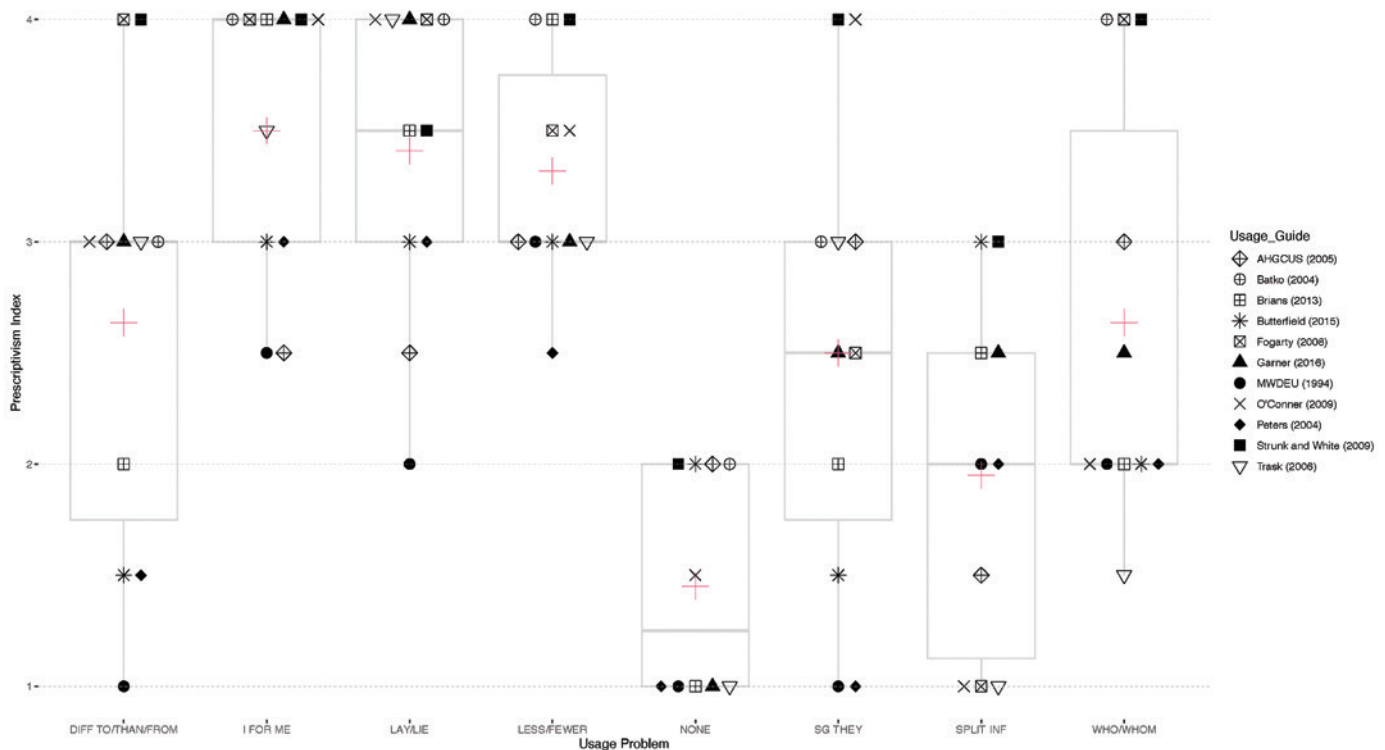
Figure 2: Box and whisker plot showing the descriptive statistics for the prescriptivism index of each usage problem. The "+" in each box indicates the average prescriptivism index for each usage problem.

same authors (Batko, Fogarty, Garner, and O'Conner), as well as Trask (2006), took a maximally prescriptive stance toward the LAY/LIE usage problem as well.

Garner's (2016) view demonstrated the highly prescriptive tone that some usage guides took with the I FOR ME usage problem:

> Here is the characteristic view of the modern descriptive linguists: "The meaning is clear; 'I' is no less, or more, euphonious than 'me'; if the usage offends, it does so because the hearer (occasionally) or the reader (more frequently) is in the habit of expecting 'me.' Why is such a habit worth fighting about?" Ellsworth Barnard, *English for Everybody* 25 (1979). This view ignores the reality and the importance of the thousands of settled views of English usage. *I*, as an object of a preposition or a verb, has long been stigmatized. Using it in the objective case simply relates doubts about the speaker's ability to handle the language. (p. 111)

Trask's (2006) comments on the LAY/LIE usage problem were also highly prescriptive, saying that

"standard English absolutely requires a distinction between intransitive *lie* and transitive *lay*" (p. 167). And, similar to Garner's suggestion that others will look down on users who fail to follow the I FOR ME rule, Trask also suggested that following the LAY/LIE rule is required of readers who want to be respected: "Native speakers of vernacular English will often find this distinction unnatural and difficult, but mastery of it is essential if you want to be regarded as literate" (p. 167).

In contrast to looking at the average prescriptivism index, another way to determine the most prescriptive usage problems is to look at which ones had the highest minimal score among the usage guides. When viewed this way, the I FOR ME usage problem was still the most prescriptive usage problem, but it was joined by the LESS/FEWER usage problem, as both had minimum prescriptivism indexes of 2.5. The two guides that treated I FOR ME with minimal prescription were *Merriam-Webster's Dictionary of English Usage* (1994) and the *American Heritage Guide to Contemporary Usage and Style* (2005). The only guide that treated LESS/FEWER with minimal prescription was Peters (2004). A prescriptivism index of 2.5 falls squarely in the middle

of the scale (see Figure 1) and does not clearly indicate whether the usage-guide author recommends erring on the side of following the rule or breaking it. So, for these two usage problems, no guides suggested that writers and editors could comfortably err on the side of breaking rule.

This lack of a clear recommendation is evident in excerpts from the usage guides. Peters (2004) said the decision to use *less* or *fewer* is a "stylistic choice" (p. 205) based largely on the formality of the context. Similarly, after offering a catalog of historical commentary on the I FOR ME issue, *Merriam-Webster's Dictionary of English Usage* offers the following advice that underlines the contextual considerations its author(s) feel writers should keep in mind when determining whether to follow the rule or not:

> Conclusion: you are probably safe in retaining *between you and I* in your casual speech, if it exists there naturally, and you would be true to life in placing it in the mouths of fictional characters. But you had better avoid it in essays and other works of a discursive nature. It seems to have no place in modern edited prose. (p. 183)

The I FOR ME, LAY/LIE, and LESS/FEWER usage problems are associated with rules that usage-guide writers seem to care about a lot. Writers and editors may consider treating these usage problems prescriptively if they wish to align with prescriptive guidelines. On the other hand, writers and editors who may wish to ignore these prescriptive rules should do so with the understanding that many usage guides—and likely many readers as well—will disagree with their decision. Smith (2023) argued that copy editors should feel free to break any prescriptive rule if they have a reason for doing so. Therefore, writers and editors who choose to ignore these rules are advised to first have a clear, identifiable reason for doing so.

The usage problem with the lowest prescriptivism index

The NONE IN PLURAL CONTEXT usage problem had the lowest average prescriptivism index (1.45) and by far the lowest maximum score (2). Five of the 11 usage guides—the most of any usage problem—treated it with the lowest possible amount of prescriptivism: Brians (2013), Garner (2016), *Merriam-Webster's*

Dictionary of English Usage (1994), Peters (2004), and Trask (2006). Three other usage problems (DIFFERENT TO/THAN/FROM, SINGULAR THEY, and SPLIT INFINITIVE) had at least one guide that was assigned a prescriptivism index of 1, but the NONE IN PLURAL CONTEXT usage problem was the only one to receive the lowest prescriptivism score by five different guides.

NONE IN PLURAL CONTEXT was also the usage problem that caused the most disagreement between the two raters during coding. Of the 10 guides that commented on NONE IN PLURAL CONTEXT, the two raters disagreed on half of them, and of those five disagreements, four ratings were more than one value apart (i.e., not adjacent agreement). This high level of disagreement may have resulted at least in part from the way the traditional prescriptive rule was defined for this study. The study adopted the most extreme definition, stating that *none* is always singular and therefore should be used only with singular verbs. However, as Kim (2018) found, "most dictionaries and grammar/usage books . . . dismiss the myth that *none* can only be singular" (p. 52). Most of the entries in the guides I studied also suggested that *none* can be used as both a singular and a plural pronoun; however, some entries seemed to clearly reject the traditional rule while at the same time suggest that the rule should be followed in certain circumstances. This may be one reason that achieving agreement for the entries on this usage problem was so difficult.

Butterfield's (2015) entry is indicative of this apparent dual nature. The entry begins with a clear rejection of the rule, saying, "It is a mistake to suppose that the pronoun is singular only and must at all costs be followed by singular verbs or pronouns" (p. 551). But it ends with advice that acknowledges the contextual constraints writers and editors must consider when choosing whether or not to follow the rule: "Verdict: use a singular verb where appropriate but if the notion of plurality is present a plural verb has been optional since the OE period and in some circumstances is desirable" (p. 552).

The *American Heritage Guide to Contemporary Usage and Style* (2005), Batko (2004), Butterfield (2015), and Strunk and White (2009) all had the highest prescriptivism index for the NONE IN PLURAL CONTEXT usage problem, each receiving a 2. No other usage problem had such a low maximum prescriptivism index. The nearest one is SPLIT INFINITIVE, with an

index of 3. With a maximum prescriptivism index of 2, writers and editors can comfortably err on the side of ignoring the traditional rule for the NONE IN PLURAL CONTEXT usage problem.

The usage problems with the most variation in their ratings

Two of the usage problems received the full range of ratings from the prescriptivism index scale: DIFFERENT TO/THAN/FROM and SINGULAR THEY. The average prescriptivism indexes for both usage problems were similar; however, the level of prescriptivism with which usage guides treated SINGULAR THEY was slightly lower (2.5 vs. 2.64 for DIFFERENT TO/THAN/FROM). Excerpts from usage guides on the DIFFERENT TO/THAN/FROM usage problem demonstrated the very different views usage guides express about whether or not to follow this rule. Fogarty's (2008) entry (prescriptivism index: 4) stated the rule concretely and then offered a mnemonic to help readers remember it so they can follow it in their writing: "*Different from* is preferred to *different than*. I remember this by remembering that *different* has two *f*s and only one *t*, so the best choice between *than* and *from* is the one that starts with an *f*" (p. 22).

In contrast, the entry in *Merriam-Webster's Dictionary of English Usage* (prescriptivism index: 1) reviewed the history of the DIFFERENT TO/THAN/FROM usage problem and concluded with the proclamation that all three variants are standard and therefore unproblematic:

> In summary we can say that there need have been no problem here at all, since all three expressions [i.e., *different to*, *different than*, and *different from*] have been in standard use since the 16th and 17th centuries and all three continue to be in standard use (p. 343)

Unlike DIFFERENT TO/THAN/FROM, SINGULAR THEY is a usage problem that carries with it a heavy social and cultural load. The use of *they* as a singular pronoun has received increasing attention in recent years due to its growing use as the preferred pronoun for people who do not identify with traditionally masculine or feminine pronouns. Indeed, major style guides now accept this use of *they* as a singular pronoun, and *Merriam-Webster* declared *they* its word of the year in 2019 (Harmon, 2019).

Given the changing attitudes about the use of *they* as a singular pronoun, it is not surprising to see a wide range of opinions on its preferred use in the usage guides. Peters's (2004) entry (prescriptivism index: 1) showed an uncompromising acceptance of this use: "Yet that kind of response to singular **they/them/their** [i.e., avoiding them as singular pronouns] is no longer shared by the English-speaking population at large. Writers who use singular **they/them/their** are not at fault" (p. 538, emphasis in original). O'Conner's (2009) entry (prescriptivism index: 4), on the other hand, took the opposite view. She called the use of singular *they* "careless" and "a mistake," and she advised readers who do not want to use generic masculine pronouns or other workarounds to simply reword the sentence rather than using a singular *they* (pp. 13–15). Some parts of the entry can even sound jarring to today's progressive readers: "Strictly speaking, one person can't be a *they*. Yes, it's tempting to use *they* and *them* when you don't know whether the somebody is a *he* or a *she*. But resist the temptation" (p. 13). As noted above, the edition of O'Conner's book included in this study is the third, published in 2009. The fourth edition, published in February 2019, was released while data was being collected and analyzed for this study and is therefore not included in the formal analysis. However, reviewing the fourth edition's commentary on SINGULAR THEY reveals a marked shift in the advice O'Conner offers on this issue, as the new edition now approves of the use of singular *they* with indefinite antecedents. This change reflects O'Conner's response to the rapidly shifting views on the cultural norms associated with this usage problem, and it underscores the need for studies like this one to repeatedly analyze the extent to which usage guides treat usage rules prescriptively—especially as the guides are updated and revised.

Prescriptivism Profile of Usage Guides

The previous section has reviewed the prescriptivism indexes for the usage problems I studied. In this section, I discuss the prescriptivism indexes for the usage guides. Figure 3 shows the descriptive statistics for each of the usage guides included in this study. Table 4 shows the minimum, maximum, and mean scores for each usage guide.

As the figure and the data in the table make clear, some usage guides tended to be much more prescriptive in general than others, and vice-versa. Strunk and
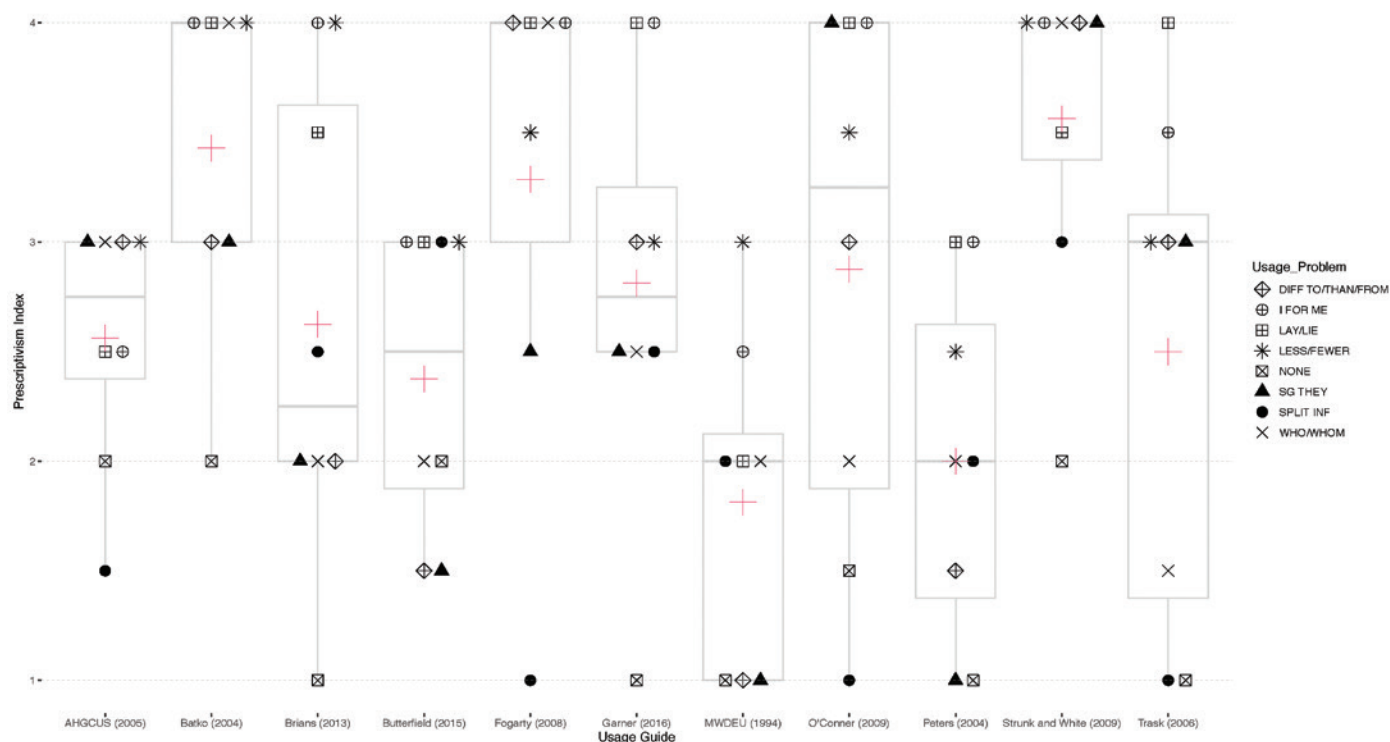
Determining levels of prescriptivism

Figure 3: Box and whisker plot showing the descriptive statistics for the prescriptivism index of each usage guide

White (2009) had the highest average prescriptivism index (3.56), indicating that, for most of the usage problems analyzed in this study, Strunk and White suggested their readers should uphold the rule. In fact,

Table 4: Descriptive statistics of usage guides. The minimum, maximum, and mean values for each usage guide are shown. These values are presented visually in Figure 3.

Usage Guide	Min	Max	Mean
The American Heritage Guide to Contemporary Usage and Style (2005)	1.50	3	2.56
Merriam-Webster's Dictionary of English Usage (1994)	1	3	1.81
Batko (2004)	2	4	3.43
Brians (2013)	1	4	2.63
Butterfield (2015)	1.50	3	2.38
Fogarty (2008)	1	4	3.29
Garner (2016)	1	4	2.81
O'Conner (2009)	1	4	2.88
Peters (2004)	1	3	2.00
Strunk & White (2009)	2	4	3.56
Trask (2006)	1	4	2.50

LAY/LIE is the only usage problem for which Strunk and White were not among those who showed the highest level of prescriptivism. Batko (2004) had the second highest average prescriptivism index (3.43). She did not comment on the SPLIT INFINITIVE usage problem, but, for the remaining seven, she took a maximally prescriptive stance on four (I FOR ME, LAY/LIE, LESS/FEWER, and WHO/WHOM) and the most prescriptive stance among the other guides for one more (NONE IN PLURAL CONTEXT). Neither Batko nor Strunk and White took a minimally prescriptive stance on any usage problem.

In contrast to these two highly prescriptive usage guides, *Merriam-Webster's Dictionary of English Usage* (1994) had the lowest average prescriptivism index (1.81), suggesting that in most cases, the authors of this usage guide allowed their readers to make their own decisions on whether to follow the traditional rules or not. Peters (2004) had the second lowest average prescriptivism index (2.00). These two guides both rely heavily on data (historical commentary and usage in the case of *Merriam-Webster's Dictionary of English Usage* and corpus data in the case of Peters) to make their recommendations. Taking this data-driven approach

likely minimizes the personal bias of the authors and results in a less prescriptive approach overall.

Brians (2013), Fogarty (2008), Garner (2016), O'Conner (2009), and Trask (2006) showed the greatest variation in their assessments as the only five guides that had scores spanning the whole range of the prescriptivism index. In contrast, the *American Heritage Guide to Contemporary Usage and Style* (2005) and Butterfield (2015) were the most moderate guides, both with the smallest range between their minimum and maximum scores and the only two guides that did not rate any of the usage problems with scores at either extreme end of the prescriptivism index. Writers and editors looking for advice that is neither minimally or maximally prescriptive might consider adding the *American Heritage Guide to Contemporary Usage and Style* or Butterfield to their collections.

The results presented in this section have demonstrated the degree to which current usage guides treat commonly discussed usage problems differently, and they highlighted the overall level of prescriptivism observed in each usage guide. As I noted earlier, someone unfamiliar with usage guides might assume that all usage guides offer the same (or similar) guidance on whether to follow a prescriptive usage rule or not. However, the findings discussed here suggest otherwise. Variation can be observed in the advice usage guides offer, which can result in some usage guides being more (or less) prescriptive than others.

CONCLUSION

One of my goals in carrying out this study has been to demonstrate that usage advice does indeed vary—and not just from one usage problem to another, but also in terms of how prescriptively individual usage guides treat the same usage problem. As this study shows, advice for the same usage problem can vary widely across different usage guides. The study presented here has showed the extent to which this is the case—at least for the small sample of usage guides I analyzed.

Overall, the findings from this analysis show that the results skew high on the prescriptive scale for the data I analyzed. Six of the eight usage problems and eight of the 11 usage guides had mean indexes at or above the midpoint of the prescriptivism scale. In addition, six of the eight usage problems were treated with maximal prescriptivism by at least two usage guides, and seven of the 11 guides gave maximally prescriptive advice for at least one usage problem. Given that we generally think of usage guides as prescriptive works, the fact that the overall results skew high is unsurprising.

However, there are still important indicators of a lack of prescriptivism observed in the data. One usage problem, NONE IN PLURAL CONTEXT, received a maximum prescriptivism index of 2, which is on the "prescription-breaking" half of the scale shown in Figure 1, and all but four guides gave at least some minimally prescriptive advice. In addition, of the 86 total ratings made by the coders[2], more than one-third (31/86 = 36.05%) were considered prescription-breaking (i.e., received a rating between a 1 and 2, inclusive, on the prescriptivism scale). So, while the majority of the entries rated for this study were at least somewhat prescriptive, a sizeable amount was not, suggesting that usage guides regularly give advice that allows writers and editors to comfortably break traditional prescriptive rules—at least in some contexts.

While the findings from this study are particularly relevant to copy editors and those who engage in the task of copyediting, they are useful for other people and other reasons as well. For example, an awareness of varying levels of prescriptivism can inform writers' choices of style for different audiences and purposes. Understanding that some usage guides are more or less prescriptive can help writers tailor their style to suit the needs of specific audiences and contexts because it gives them the freedom to do so. In addition, the findings presented in this analysis have implications for the teaching of technical and professional writing. Instructors could use the findings to guide discussions of prescriptivism and usage with their students. Students learning to become technical writers would benefit from understanding levels of prescriptivism in common usage guides. Finally, the findings of this study can have broader implications for communication across disciplines and cultures. Prescriptive rules vary across fields and cultures, so an awareness of differing levels of prescriptivism can help technical communicators navigate multiple discourse communities.

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2   *Coding eight usage problems from 11 usage guides would yield 88 total ratings. However, Batko (2004) did not address the* SPLIT INFINITIVE, *and Fogarty (2008) did not address the* NONE IN PLURAL CONTEXT *usage problem. Therefore, there are 86 total ratings.*

Determining levels of prescriptivism

The analysis for this study has been robust in many ways, but it is not free from limitations. For example, I collected entries from only a small number of current usage guides to assess current recommendations for a small number of usage problems. While the data analyzed was sizable (amounting to roughly 60,000 words of usage-guide advice) and enough to point to potential patterns, it is still not enough to make conclusive pronouncements about the state of usage guides and usage problems as a whole. Future studies might analyze the usage advice for additional usage problems from a larger number of usage guides (including not only those intended for an American audience) to provide a more comprehensive view of the level of prescriptivism present among usage guides.

In addition, in the current study, raters assigned only one prescriptivism index for each usage problem per usage guide. Future studies might break the entries down into smaller codable units or comments (see Yáñez-Bouza, 2015), assign a rating to each comment in which a usage problem is discussed, and then average these ratings together to create a potentially more accurate prescriptivism index for each usage guide.

Another limitation was the fact that the author was one of the raters of the data. This can introduce biases into the coding (Neuendorf, 2017), but as Neuendorf also explained, "in unfunded academic research," having a principal investigator act as a coder "is a logistic fact of content analysis life" (p. 157). Having a second rater code the data and averaging the ratings each coder assigns should help to mitigate any biases introduced into the analysis.

Despite the limitations, the findings presented here have important implications for technical communicators as they consider what usage advice to follow. Knowing which usage problems are treated more or less prescriptively, and knowing approximately how prescriptive or lenient a usage guide is, can help writers and editors to more critically consider the advice given in the guides, rather than simply accepting the advice that one usage guide gives. When usage-guide advice conflicts, and writers and editors are unsure of which course to take, they should carefully consider the rhetorical situation of the text they are editing (Buehler, 1980, 2003). They might also follow Smith's (2023) advice to use corpora to help them make their decisions.

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Heuristics for Equitable Technical Communication in Remote & Hybrid Game Development

By Rich Shivener, Elizabeth Caravella, and Renee Gittins

ABSTRACT

Purpose: This article seeks to provide a set of heuristics for technical communication, addressing the newfound challenges to game developers as a result of the seemingly permanent shift to hybrid and remote work in this industry. In particular, this piece offers developers tangible ways in which they can facilitate productive and equitable means of technical communications that account for the unique needs of this kind of work that now takes place in almost exclusively remote and hybrid working situations.

Method: This piece relies on both survey and interview data collected from nearly 300 members of the Independent Game Developers Association (IGDA) and at various games-based conferences (e.g., the Game Developers Conference) over a period of two years through a partnership grant between York University and the IGDA.

Results: The results noted two key findings: First, the majority of game developers do not want to or intend to ever return to a fully physical office setting. Second, the results indicate that the shift to remote work more often negatively impacted female and non-binary developers, most likely due to the additional caregiving responsibilities traditionally emplaced on these groups.

Conclusion: Technical communication is a central part of the game development process and has become even more pivotal as developers continue to operate under remote and hybrid working conditions. As such, the heuristics developed from this data focus on addressing the needs of these groups so that the remote and hybrid workplaces can operate as equitably as possible in this new industry model.

Keywords: game development, discord, remote work, collaboration

Practitioner's Takeaway:

- Unlike more synchronous means of online communication like Zoom, specialized platforms like Slack or Discord are better suited to encourage and facilitate ad-hoc technical discussions between developers.
- Moderators might consider using a group webcam and additional tools in order to ensure in-person and remote developers have either the option to view the body language of the meeting or are able to otherwise leverage chat or other means of communication (e.g., transcripts, reactions, etc.) so they can share/be shared with everyone.
- From project leads to developers within, studios should be iterating on technical communication practices because platforms are constantly evolving.
- These technical communication practices hold value for many studios as well as those in related and allied industries.

Heuristics for equitable technical communication

INTRODUCTION

For many game developers, technical communication is iterative, collaborative, and dynamic. In this industry, technical communication practices often encompass game design documentation (GDD), daily team meetings about tasks, collaborative in-house wikis, and informal messaging through various digital platforms (e.g., Slack, Discord) to communicate and solve problems. These practices also involve adopting and customizing communication platforms and media that support the aforementioned. As noted by Richard Colby and Rebekah Shultz Colby (2019) in "Game Design Documentation: Four Perspectives from Independent Game Studios," prior to the COVID-19 pandemic, games-based technical communication took place in the fast paced, face-to-face office environments that once dominated the industry: "If everyone on the team knows where the designer is sitting, you can go and talk to [them] whenever you run into a future question, [light documentation] works pretty easy" (p. 8). However, as the pandemic necessitated a great migration to remote work, this reliance on light documentation with quick in-person clarification became a major pain point for some developers as they shifted to more isolated environments (Caravella et al., 2023). In addition, while the pandemic has not yet fully subsided and some industry areas seem keen on returning to a shared office environment, recent research indicates that very few game developers want a full return to the office, with most preferring either a flexible hybrid return or to remain fully remote (Caravella et al., 2023). As such, this spatial shift in the industry reveals the need to reframe technical communication practices in game development. In response to this need, the current project aims to provide a set of heuristics game developers can use in order to adapt previous in-person and ad-hoc means of technical communication to the current hybrid and fully remote practices that, for many developers, have become the new normal of this industry. By doing so, we hope to illustrate not only how technical communication has and is changing in response to the lived experiences of these developers, but also how such adaptations may inform how we think about various means of technical communication (both formal and informal) across the larger field.

In our initial article, "Surveying the Effects of Remote Communication & Collaboration Practices on Game Developers Amid a Pandemic" in *Communication Design Quarterly*, our research team examined and broke down some of the key challenges faced by game developers during the global shift to remote work. In our survey to game developers, we asked, "A number of game developers have reported difficulties communicating/collaborating with their team(s) remotely. How would you respond to this?" Through open-ended questioning, our research was interested in collecting data on technical communication practices like those previously noted. Our findings revealed that game developers struggled, for example, with the many emails and meetings related to documenting changes, updates, and moving to asynchronous teams. In addition, equity issues for women and other marginalized developers across teams persisted, and, in some cases, were magnified by the shift to remote work as well. Since this initial study, this research has expanded beyond merely addressing technical communication difficulties in remote and hybrid work to offering actionable heuristics to mitigate said difficulties. This expansion proves especially important for game developers, as it seems unlikely that they are going to have a massive return to the physical office (Caravella et al., 2023). Thus, by first pinpointing the actual, experienced pain points of developers both at the start of the pandemic and more than two years in, we can better address both initial and longstanding issues as they relate to technical communication. At this juncture, then, we are most concerned with the development of heuristics that help address certain equity issues as they emerged from the previous study, so that all game developers working under this new industry model have an equal chance at thriving within their industry.

Toward this goal, we first define and contextualize the role of technical communication in game development, arguing that many developers are responsible for technical communication practices. From this context, we chart our study's background and research methods, including survey and interview protocols to collect evidence on how developers adjusted their wider communication and collaboration practices. Drawing on additional input from our partnership contact at the Independent Game Developer Association, Renee Gittins, we then offer, based on this evidence and current technical communication theory, a set of heuristics for how game developers might approach technical communication

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practices in hybrid and remote working conditions to strengthen their communication and collaboration capabilities working in these environments. By doing so, we move beyond the initial findings in our original article that uncovered these pain points to offering actionable practices to combat said pain points brought on by remote and hybrid work in game development, while addressing the areas of inequity that the original survey and interviews uncovered.

TECHNICAL COMMUNICATION & GAME DEVELOPMENT

Before we delve into our heuristics, a definition of technical communication in the context of game development is necessary. Previous scholarship and our research demonstrate that technical communication is embedded throughout multiple layers and stages of game design, meaning that many developers are sharing technical communication responsibilities from a game's concept to its final delivery. In addition, while some larger developers do have one or two specific hires dedicated to technical communication in and of itself, fully dedicated TC positions are rare within the industry. Rather, programmers, managers, consultants, and even creative roles instead come with expectations for TC-based documentation throughout the development process.

Like the lack of specific technical communicator roles within the industry, while TC sometimes refers to specific forms of writing and documentation that we traditionally consider technical communication (i.e., the game design document), within the games industry, technical communication also includes managing and deploying digital communication channels for collaboration and user testing (e.g., Kilduff-Taylor & Parker, 2022; Yu, 2023). For example, although the digital application Discord may not necessarily be considered a hub for technical communication across all offices, it can be a space for generating ad-hoc technical communication between game developers; they use the space to compose and share written documentation of the technical aspects of the development process, though less formally than constructing a specific document to house this information, as demonstrated in Figure 1. The same idea applies to game developers who develop in-house Wiki pages for their projects, where multiple members of the development team can freely refer to,

adjust, and revise collaborative documentation across the development process (Ryan, 2009; Valve Developer Community). Development teams and publishers also conduct useability testing in-house or through a third-party, then turn those research reports into actionable revisions (O'Donnell, 2009; 2014). While these forms of technical communication between developers have always been important, they become utterly pivotal to successful communication when developers do not share a physical space or must keep documentation constantly updated and shared across large groups or teams. These examples hold practical and research value for the field of technical communication, and even more so as we unpack the heuristics section of this article. They demonstrate that technical communicators and those responsible for technical communication (read: game developers) must continually refine practices in response to new work conditions and global exigencies.

As game development usually requires teams of various sizes (though there are, of course, a handful of independent game designers who develop full games completely on their own), game development both creates opportunity for and necessitates technical communication and collaboration skills. One way in which these practices are formalized is through the creation and distribution of game design documentation, which comes in various forms but ultimately shares the same goal: providing technical documentation for the complex systems games require. As noted by deWinter and Moeller (2014), "games provide frameworks for interaction, and exist within complex cultural and economic structures that influence game creation, consumption, and
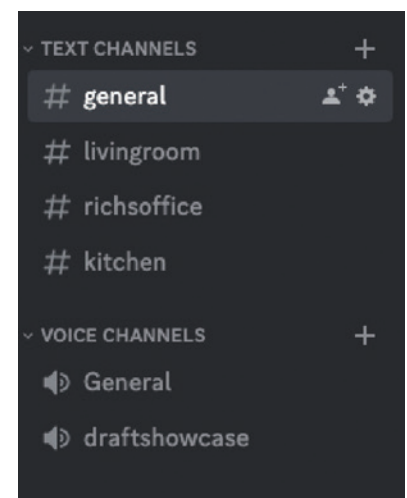

Figure 1: A simulation of Dave Gagne's discussion of "rooms" that Rage Cure Games creates on the platform Discord. On Discord, "channels" can be named to signal their purposes. They can be arranged as text channels or voices. Server example created by the authors.

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deployment" (p. 8). They go on to explain that this means developers must design complex "systems of experience" (p. 8) when creating games for players. As this process then "explore[s] relationship between audiences and interactive texts" (McDaniel & Daer, 2016, p. 157) through "world design, system design, content design, game writing, level design, and user interface (UI) design" (p. 157), it becomes clear that game developers are working within large collaborative teams that must be able to exchange technical information quickly and accurately. In the case of smaller development teams, previous in-person office exchanges about technical information were speedier than online meetings and digital communication channels. Many developers we interviewed have noted the ease of ad-hoc exchanges from simply walking over to someone's desk. To wit: "When people are in the same space physically, there is a kind of raw energy and momentum that can occur that is very difficult to capture otherwise with our current technology." In this case then, clearly game designers (even those working on smaller teams) still encounter the "challenging production scenarios" (McDaniel & Daer, 2016, pp. 156–157; Greene & Palmer, 2014) and must contend with technical communication as a means of sharing ideas. Furthermore, as this process requires communication and collaboration from individuals across a broad range of fields and disciplines (Tran & Biddle, 2008, p. 49; O'Donnell, 2014), any infringement on this development process caused or exacerbated by a shift to remote and hybrid work must be addressed.

As noted by Mason (2013), game development and technical communication overlap in three main areas: design, information management, and systems of development. As noted by deWinter and Moeller (2014), previous literature on this topic was "concerned with understanding humanistic interests and agencies among technical processes" (p. 6), and often focused on communication processes as they took place between developers (McAllister, 2004; Robison, 2008; O'Donnell, 2009; Daer, 2010). In addition, this scholarship has also examined how these developers use the various tools for technical communication made available to them to communicate and solve complex problems through said documentation in the fast-paced environments these offices are often known for (Spinuzzi, 2008; deWinter & Vie, 2016; McDaniel & Daer, 2016). Despite some of these

studies including sections or areas where they examine game development writing and design practices in hybrid or interdisciplinary teams (deWinter & Moeller 2014), few, if any, scholars have examined these communication processes through the new necessitated exigence of hybrid and remote game development. In fact, though some offices were operating remotely prior to the global shift to remote work, many game developers did not work from home (Informa, 2020). Many strategies for technical communication in game development assumed some level of face-to-face interaction, either for ease of clarification or speed of response. As the larger industry has shifted, though, remote work has replaced much of that interaction. In fact, only a third of developers we surveyed reported a desire for a full return to the physical office (Caravella et al., 2023). In other words, the work environments Spinuzzi (2015) refers to as "all edge adhocracies" now need some adjustments to a more structured approach to accommodate the new (for many) normal of hybrid or remote game development. A hybrid or fully remote model is not analogous to an in-person environment, even if most of the workday still takes place via computer, as remote collaboration and communication requires its own specific skills for workflow management (Czaudernal & Guardiola, 2021). Though game development companies have "always flirted with remote work" (Leonardi, 2020, p. 249) with consultants or freelancers, such a sudden shift on a large scale means that a large number of current practices, especially in the area of technical communication and collaboration, need to be adjusted to better match the work environment in which more and more developers now find themselves.

In addition to recognizing the sheer mass of information that must be documented and the overlapping of various teams that create content in each development cycle, scholars have also noted that the complexity of game development heightens the likelihood that developers experience issues regarding communication and politics (Tran & Biddle, 2008). Others contend that collaboration between developers also often breaks down because of said complexity (O'Donnell, 2014) and, due to the myriad of ways a game can be made, exactly what these complexities are and why they lead to collaborative disintegration cannot be easily generalized. As such, the field of game development must also wrestle with the tensions

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and best practices for effective communication and collaboration between developers at various stages of the development process and across various disciplines (Tran & Biddle, 2009). Communication and collaboration are so essential to the game development process that O'Donnell (2014) defines development as "the assembly of a space where creative collaboration can occur. Any commitment to a single person's ego, approach, or perspective will only end in disaster" (p. 70). In addition, such claims have also amplified the tensions faced by women and other marginalized developers within a White, heteronormative, male-dominated industry (Kerr, 2021; Bailey et al., 2021; Weststar & Leaguilt, 2018; Helper, 2019). Not only are developers coming together from various disciplines and professional backgrounds, but they are also integrating and collaborating with one another while navigating personal differences, and any heuristic for facilitating effective technical communication must acknowledge and address these particular tensions in order to be useful to a wider breadth of developers rather than a single or majority demographic.

Following this thread, in a study of game development in higher education, Harvey (2021) found that cis and trans women in games programs noted a number of coping mechanisms for navigating the male-dominated field these women wanted to join. Some strategies by these women included purposefully isolating themselves from their teams, avoiding group social events, and even taking steps to obscure their true identities: "this approach hinders some trans students in their transitioning, and several women in these courses indicated that tolerance for sexism, transphobia, and misogyny were key to their success in the field" (p. 10). Through Harvey, then, we can further see the importance of strong and inclusive approaches to remote and hybrid communication and collaboration in game development, as it is also these marginalized groups who reported struggling the most with the shift to remote work (Caravella et al., 2023). While it is clear from the nature of game development that good technical communication is essential to ensuring accurate and accessible information, Harvey's study into the realm of games programs further illustrates the need to refine such communication and collaboration practices so that the shift to more remote or hybrid models does not further isolate or disconnect developers already on the margins of their own industry.

METHODS

To develop our heuristics, data were collected as part of this REB-approved study from game developers across various roles, most of whom were members of the International Game Developers Association (IGDA). The survey and interview data here represent a broad selection of developers from various-sized companies, as well as across a number of different countries and projects. As the goal of this study was to uncover emergent attitudes regarding the shift to remote work, both the initial survey questions and follow-up interview questions were left purposefully open ended, rather than relying on Likert scales or other quantitative means of response. Once data were collected, we relied on a grounded theory method to first find common threads of discussion as they emerged, followed by a secondary sweep of the data to then find the created categories/themes that had been uncovered. These themes were then considered in conjunction with the literature and follow-up interviews to develop the heuristics discussed below.

DATA COLLECTION & ANALYSIS

Data were collected in two parts. First, a developer survey was distributed via the IGDA's mailing list, inviting any developer with an active IGDA membership to partake. As this was a partnership study, the topics covered were decided in consultation with executive director and staff of the IGDA, leading to the survey, which included questions regarding developers' mental health before and after pandemic conditions, their perceived productivity upon moving to remote work as a result of the pandemic, and whether or not developers saw a need to return to physical offices in order to improve either of the aforementioned areas (mental health and productivity). In addition to these brief response questions, the survey also recorded demographic information for participants, including their age, gender, and occupation/title/role at their current company, as well as the overall size of their current company (independent, small, medium, or large). These demographic results are discussed in more detail in a previous report (Caravella et al., 2023).

As part of the initial survey distribution, participants could voluntarily provide their email addresses if they wanted to be contacted for more in-depth interviews related to the study. These semi-structured

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interviews occurred two months after the initial survey distribution, where participants were reminded of their responses given on the initial survey prior to being asked to elaborate and answer follow-up questions. The follow-up questions were aimed at garnering a deeper understanding of participants' individual contexts and experiences more specifically relating to various forms of technical communication and collaboration practices that could only be alluded to within the initial survey. Finally, additional interview data were collected from additional developers both within and outside of the IGDA through this same semi-structured process at the Game Developer's Conference in San Francisco in March 2022 and the Montreal Gaming Expo Arcade in October 2022. As these interviews were not connected to existing survey responses, participants were first provided a handout of some of the initial findings from the first part of the study (Caravella et al., 2022) prior to being asked about their own experiences with communication and collaboration practices during their remote work experiences.

Statistical analyses as well as a grounded theory method of analysis—in which we constantly compared and categorized written responses in our survey and interview data—animated our initial findings and the proceeding heuristics (Caravella et al., 2023). While the initial survey results contributed to the formation of the heuristics we discuss in this article, the combined collection of interviews cemented the heuristics by affording us insights into the work of specific developers and their technical communication practices. That is, while the initial survey questions formed the basis of what we hypothesized would be reinforced by the follow up interviews, it was not until we were able to analyze the pattern of responses from the interviews themselves that we were able to definitively extrapolate the resulting heuristics discussed below. However, despite our initial hunches from the survey data, our semi-structured

interview questions still asked responders to speak rather generally to broad questions about how they used various forms of communication (both technical communication and otherwise) after their shift to remote work to help prevent biasing the data. Despite this open-ended approach (and highlighting the key role technical communication plays within the industry even when not specifically named as such), every developer we interviewed shared stories of solving technical communication problems by adapting or adopting new tools and practices (noted in Table 1).

Demographic Results and Technical Communication Across Roles

Although our findings sections will go more in depth as to the qualitative results of the interviews, this section will first briefly establish the demographic context from which these results were derived. To begin, a total of 245 members of the IGDA responded to the initial survey. Ages ranged from 21 to 71 years old, with most responses coming from 30–45-year-olds. Regarding gender, 69% (169) responded male, 24% (59) female, 4% (10) nonbinary, and the remaining 3% (7) chose not to disclose. Although this spread does not offer an equal perspective between genders, the percentages do match the larger general profile of IGDA members (where, historically, most members are male) as well as the larger general statistics for game developers as published by Western University's 2020 Game Developer Satisfaction Survey (Westar, 2021, pp. 5–6), meaning the sample is representative of both the IGDA organization as well as the current population of game developers within the larger industry.

In addition to the demographic results, the survey also allowed for developers to input their specific job title or role within their companies. While these titles varied wildly between respondents, upon review of the data, it became clear that these titles/roles could

Table 1: Developing heuristics. Surveys and interview data revealed problems and potential solutions to technical communication problems for game developers.

Survey Result (As Detailed in Previous Article)	Interview Example	Heuristic
40% (96) responses did not think returning to the office would increase productivity; 70% (67) of these responses indicated that forcing a return to the office would decrease productivity (Caravella, Shivener, and Narayanamoorthy, 2023).	"For the writing [and remote workers], we use [the communication platform] Slack, which allows us to make threads. A lot of threads. So threads are useful because all the pertinent information on that subject is in that thread. It just keeps stuff together."	Articulating the appropriateness of communication tools for work and social bonding

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be grouped into four key categories: supervisory/ administrative roles such as directors or project managers (38%), programming or development roles such as software developers (37%), creative roles such as artists or story writers (17%), and academic roles such as professors or graduate students (7%). A total of three participants did not list a role. However, despite the clear categories for roles, there are two key elements of these roles with regard to the present study: 1) These roles often overlapped, with some respondents noting that while they were a director, they also took part in creative process or code development, and 2) regardless of the role or classification, nearly all participants also noted some type of technical communication (be it documentation, white papers, or other forms of TC) as accompanying part of their job. Although none of the respondents noted that they were technical communicators specifically, as noted in the literature review, nearly every role requires some level of technical communication skill within the realm of game development writ large.

HEURISTICS FOR ADDRESSING COMMUNICATION AND COLLABORATION CHALLENGES IN GAMES-BASED TECHNICAL COMMUNICATION

Moving forward, this section articulates strategies for addressing technical communication challenges faced by game developers in both fully remote and hybrid positions. As noted above, these strategies arose from survey responses and from specific strategies that have worked for developers we interviewed as well as consultations with our research partner organization IDGA. Here, we've attempted to keep these heuristics broad enough that they could be adapted to the individual needs of each development team, while remaining specific enough to be actionable. Although these approaches may not work for every single studio, they are based on the reported experiences of both the larger survey results and interviews previously noted. Still, we think these approaches hold value for many studios as well as those in related and allied industries— including but not limited to software development, education, and health and medicine. Game development is, of course, not the only industry that has shifted to and been impacted by more remote and hybrid environments (Smite et al., 2023; Steidtmann et al., 2021).

While many industries have returned to the office and others have remained fully remote, some have opted for a hybrid approach. For this article, we note that there are two types of hybrid approaches in game development. Studios use these terms interchangeably, but it's important to note the difference: one type of hybrid development is "hi-flex hybrid," where some developers are in the office exclusively and some developers are exclusively remote. That presents its own challenges versus a traditional "hybrid" environment, where all developers mix the same in-office and remote workdays (e.g., three days in the office and two days at home). That said, in some cases, both practices present the same challenges, and, in others, each practice requires its own unique approach or presents its own unique challenges. In response, both the challenges and heuristics discussed below address both fully remote as well as hybrid situations, noting the differences between the two when specific approaches may need to be altered depending on the needs of either means.

Heuristic #1: Engaging Specialized Digital Platforms to Address (the Lack of) Adhocracy

As noted above, Spinuzzi (2015) positions offices as adhocracies, or places where ad-hoc communication plays a pivotal role in collaborative practice. Traditional office environments contain passive knowledge sharing, where workers can, say, look over each other's shoulders or talk in the middle of the office. As designer Camella Avellar of Supercell told us, "It's nice to just walk around and see people, and be able to have a coffee break with them. So I guess it's this feeling of refreshment of being working that you don't necessarily get from being in your home all the time" (personal communication, August 19, 2021). For this reason and others, many game development studios have open-office environments versus individual offices with more restricted communication and social networking areas ("The Biggest Video Game Design Studios and Game Publishers of All Time"). "Watercooler talks," or unofficial idea exchanges with fellow developers around a central area of the office, are quite common in such spaces. However, moving to a fully remote situation removes what many developers previously considered a pivotal means of communication in the office environment—there is no watercooler to gather around if everyone is on Slack or Zoom. As one project lead told us in our survey, "I really miss watercooler/ coffee machine impromptu conversations for instance,

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which were a great way of taking the 'pulse of the floor' or becoming aware of issues/blockers that people didn't judge important enough to formally bring to me but that I could easily help solve." Thus, remote development can limit on-the-fly social interactions and problem-solving that can happen ad-hoc in physical offices.

This collective limitation to ad-hoc communication is something that needs to be more proactively addressed in remote environments because it happens less naturally in these online spaces but is especially important for earlier and other creative aspects of game development. Technical communication practices, like those detailed in the next paragraph, are particularly well suited for addressing this particular pain point, especially when used as proactive means of informal communication facilitation.

When it comes to communication tools useful for this kind of proactive approach, specialized digital platforms play an essential role. Our initial survey data pointed to a myriad of digital platforms, such as Zoom, Slack, and Discord to facilitate production discussions and task management (Caravella et al., 2023). As lead artist Carolanne Courcelles, of the studio Chasing Rats, told us in an interview, "We actually use Discord [for most meetings and collaborations]. We share our screen a lot to show our work and share our work with teammates." In the early stages of projects and associated meetings, then, project leads and managers of studios might entertain discussions about which tools work best for a team and the culture they're cultivating between team members and the ones they recruit. Thus, evaluating communication tools that are going to be effective for a company for team members is just as important as implementing them well. Those tools are critical for encouraging communication and collaborations that stem from it.

Furthermore, unlike more synchronous means of online communication like Zoom, specialized platforms like Slack or Discord are better suited to encourage and facilitate ad-hoc discussions between developers. Discord, for example, has "drop-in" voice chat channels, where one can quickly enter (read: click into) a shared space to throw around ideas verbally. Outside of audio channels, Slack and Discord also allow for informal reactions to statements or ideas shared on either platform via the use of emojis, GIFs, and other reactions. This type of communication then comes off as much less formal than, say, an email chain or

ticketing system, and that informality is much more reflective of Spinuzzi's (2015) depiction of adhocracy in the physical office. These forms of communication and collaboration in online spaces, then, can be further encouraged and supported by management staff or admin via the inclusion of specific channels or through modeling (that is, managers encourage the use of emoji reactions, for example, by themselves using them with employees). Quebec City game developer Dave Gagne describes how his company RageCure Games handles such channels on Discord. The company's Discord is arranged as a series of channels that signal their purposes. The "living room" channel is more informal than, say, Gagne's work room:

> We actually launched the studio during the pandemic. We're using Discord as a tool and we really transformed it into our studio, almost like a physical studio. There's a living room [channel] that means, hey, "I'm working, but I can chat with you if you'd like to talk." So it's kind of your message to say, "I'm open for discussion. And if you're in your "room," then that means you're working and if we need to discuss something, I just go into your room and we talk about it. (personal communication, 21 October 2022)

As described by Gagne, open-chat channels or even a channel named "Watercooler," for instance, can further reinforce the spaces in these remote platforms as being meant for informal communication and collaboration without having to formalize such interactions (see Figure 1, for example). Such processes can be further reinforced through the inclusion of core hours or hosting online events that mix shop talk and casual conversation much the same way as one might oscillate between such topics in an ad-hoc face-to-face setup.

Heuristic #2: Articulating the Appropriateness of Communication Tools for Work and Social Bonding

Companies who support the implementation of new communication tools for remote and hybrid workers also need to address the learning curves and the emotional labor of implementing such tools. This challenge especially came to light in our conversation with Cameron Oltmann, a developer with CodeBison. In this interview excerpt, Oltmann discusses the

differences between hanging out on the platform Discord versus Zoom.

> The other thing that we do is, we use Discord as another one of our communications tools. It's for more casual stuff and whatnot. We have official community management stuff that happens there, but we also have this thing where we encourage people to just sort of drop in and kind of hang out. We have hangout channels. You might not even be talking or doing anything there, but you're just there and people can randomly chat if they want. It's still not the same as being in the same room. And it is a little more draining than that, but it's not as draining as being on a Zoom call all day or whatever. (personal communication, 13 August 2021)

Oltmann's comment suggests that development teams—perhaps again in the early stages of a project's development—articulate when Discord and Zoom are most appropriate. Oltmann's next comment suggests that even textual platforms like Discord can be overwhelming, a sensation that has been commonplace since companies went fully remote or hybrid (Caravella et al., 2023).

> We have specifically channels in it that are designed for social spam and stuff like that, where people just talk about whatever, pictures of their cats, the horribly gross thing that some pet just hawked up on the floor, all of that kind of stuff or cool things that you did over the weekend, that sort of thing. But we do this where if something prompts more than a couple of messages, we try to encourage just kind of a jump-in quick voice call. (personal communication, 13 August 2021)

In summary, those moments of informal talk and potential ideation about a project in question can be lost without technical communicators actively addressing tools and their purposes. In abstract terms, there can be a division between remote and office developers regarding the sense of team, a challenge that is particularly emotional in nature. Remote developers can feel like second-class citizens because they're not involved with all of those types of ad-hoc team-building moments on Discord. Developers who have those closer bonds with each other might be less likely to listen to

or acknowledge the creative decisions of their remote colleagues. In other words, the lack of bonding can cause potential conflicts among team members, or at least for remote developers to feel like they're not as considered or as included as their in-person colleagues. We are not suggesting that the lack of bonding is a malicious move on the part of the studio. Put simply, it is an affective gap that can be filled with intentional, hybrid team building through communication tools and purpose-driven formalization.

For a bit of refrain, inclusive social hours on Discord between all workers can also take the form of remediated and virtual reality hangouts. Reflecting a video game aesthetic, for example, the social platform Gather allows for participants to control an avatar and interface that reveals webcams and voice chat by proximity to other avatars. As depicted in Figure 2, Gather contains multiple rooms and spaces, from lecture halls to billiard rooms. In the context of rhetoric and communication studies, it is worth noting that the Rhetoric Society of America's Summer Institute in 2021 included its opening reception in such a space to remediate conference traditions.

In addition, virtual reality systems, such as Meta Quest 2, have become rather accessible in terms of cost and installation. Encouraging teams to bond through virtual reality games and applications might help studios attend to the inclusive bonding that is layered with technical and interpersonal communication.
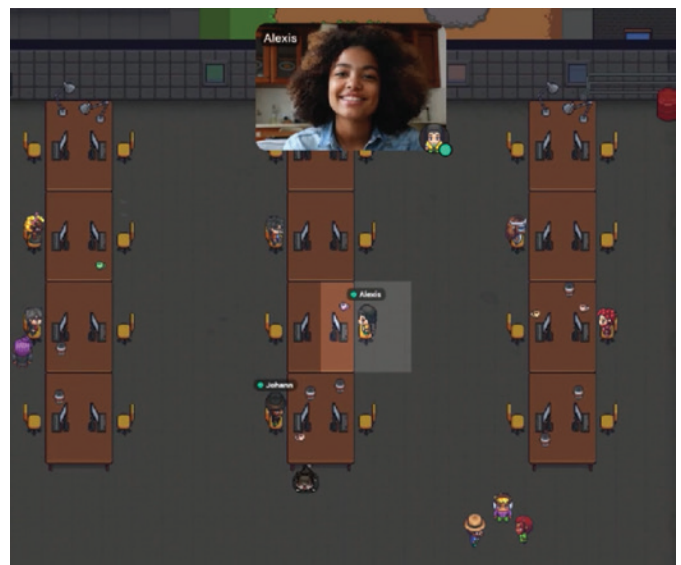

Figure 2: A screenshot of a promotional video about social platform Gather, as displayed on the company's site

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Having meaningful team-building events during work hours can be very beneficial for bringing a sense of community to remote workers. As Oltmann told us during our conversation, some goofing off, even remotely, is crucial for bonding. He recalls when the CodeBison team released a Wild Western-themed update for *Pistol Whip*. There was a taco party as well as "check-in" meetings that encouraged Western accents.

> The studio paid for lunch and drinks. People could figure out whether they wanted to be virtual or not, or all this kind of thing, whatever you wanted. We had people [making drinks and saying] like, "here's your mix. Here's grenadine. Here's the recipe for this. Here's that. Here's the hot sauce I made for my tacos that I'm having at my thing, all that kind of stuff….Even introverts are social. Even the most introverted person is a social creature because we are human. It's just that social interaction either takes energy or sort of gives us energy to varying degrees and with different kinds of interactions depending on our specific personality. (personal communication, 13 August 2021)

For studios, the goal need not be to facilitate a perfect remediation of in-person socializing but to simply try at closing affective gaps that get taken for granted in office culture yet are vital to ideation and problem-solving rendered through formal documentation and project management.

Heuristic #3: Strategic Moderation and Listening for Supporting Developers

A communication challenge related to hi-flex hybrid development reveals itself during what we might think of as "hybrid meetings," in which you have some developers in the office and some workers calling in remotely. (In software development, these meetings are often called "stand-up meetings.") In such meetings, in-office workers are communicating with each other with body language, something that remote developers cannot always pick up. As one survey respondent to the Game Developer Conference's State of the Industry 2021 reported, "Group meetings. Only one person must speak at a time, laughter and side comments could disrupt a conversation (whereas in person that would be fine)" (p. 21). Remote developers can feel excluded from that type of communication, and it needs to be

proactively addressed to make sure studios are giving them space. Raising a digital hand is different from an in-office one raised during an intense conversation. In development meetings, an inclusive approach might include moderators pausing conversations to allow remote workers to express ideas, contribute to conversations, and more. Moderators might also consider using a group webcam and additional tools to ensure all developers have either the option to view the body language of the meeting or are able to otherwise leverage chat or other means of communication (i.e., transcripts, reactions, etc.) so they can share/be shared with everyone. This inclusive approach to technical communication is crucial during periods of ideation, conflict, or even fun. As Casey O'Donnell (2014) posits, communication breakdowns are common in game development, especially when development stretches across digital communication channels and geographic borders. In hybrid contexts, such breakdowns might be avoided through strategic moderation.

Relatedly, strategic listening might fall on studio and project leaders. One of the persistent challenges and benefits of hybrid development is the flexibility that workers can enact. If a developer is a parent that needs to attend to childcare or attend to health difficulties, a hybrid model can be very beneficial for them. However, if studios are considering the hybrid approach, it's quite difficult to communicate and enforce communication rules that are fair across all workers, particularly if studios are trying to encourage developers to come into the office. It's a given that not everyone will have the same sentiment as developer Félix Liberali, game designer at Trebuchet Games: "So there's no advantage to working in the office unless you just feel better working in the office, but there's no disadvantage staying at home….I'm way more effective from home. At the office, there's way too many distractions" (personal communications, October 21, 2022). If studios are giving some people such flexibility, others might feel like they have just as valid reasons to be working remotely, and it can be difficult for studio managers to justify why some rules apply to some workers and not others. Thinking beyond technical communication for a moment, we admit that this enforcing of rules might be one of the most difficult communication challenges to address, something we as co-authors have been facing in our classrooms as well. We encourage studio leadership to

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consider checking in regularly with developers across platforms—particularly in a private virtual room similar to Gagne's aforementioned approach. As Renee has learned through her experience as a project manager and studio owner, effective communication on a team is the leader's responsibility. When developers lose the sense of person they're working with, it can be very easy to blame a slipped deadline or undelivered assets on an individual developer or area of the development team. Through documentation and the aforementioned platforms, leaders are responsible for communicating to an individual what needs to be delivered and when, and, if they slip, the leader takes responsibility. A leader can be more empathetic by supporting developers, understanding any challenges developers are facing are really the challenges of the team.

To demonstrate that support, studios might facilitate "listening sessions," in which developers share their opinions without recourse and for the purposes of adapting projects as needed. In our follow-up interview to his survey responses, John Pile, principal engineer manager with Schell Games, spoke of the value of intentional listening: "[For] those of us who give time for a one-on-one for people talk about how they're feeling, we actually have the opportunity to understand how they're feeling as opposed to just hoping that we gathered it through nonverbal communication somewhere throughout the day" (personal communication, August 16, 2021). This listening approach has merit in the field of technical communication and writing studies writ large, as demonstrated by numerous editors who co-organized such sessions "to flip the script of a traditional editors' roundtable and listen to your concerns, queries, and comments about current publication practices" ("#InclusiveTPC: A Statement from Journal Editors in the Field"). Like editors, studios might create space for developers to share information histories and experiences, perhaps anticipating conflict. If someone is a caretaker and has other obligations within their household, for example, studio leaders might need to adjust what the studio's core hours are or communicate what the expectations are for people to be at their desk at any point in time during the day. Francis Lapierre, founder of Lucid Dreams Studio, describes the studio's decision to host an all-team meeting at 10am on Discord during the work week, including in-office and remote developers.

You need to establish a structure. Every day at 10:00 we do a sync [meeting], and everybody says what they do. So you really need to develop a good tracking [system]. When you're in person, you kind of get the feeling, "OK, it's going to be the meeting." But when you're alone in front of your computer, you don't have this feedback. I think having a pre-scheduled meeting makes it easier for everybody because then the person will know it's not the time to go take a coffee and it's less stressful.

Regardless of the specific approach, strategic moderation during these hybrid points of contact can be shaped by active listening and responsive actions curtailed to each teams' specific needs and contexts.

ADDITIONAL CHALLENGES AND CONSIDERATIONS

While the previous section offered heuristics for addressing several prominent challenges faced by developers, this brief section covers two additional areas of challenge that might stem from or alongside remote work.

Costs Associated with Remote Development and Communication

In addition to appropriating communication tools and listening to developers, studios and companies that support fully remote development must attend to different costs associated with the remote communication software and hardware. Beyond sharing stories of miscommunications, developers who responded to our survey noted that they either took their work computers home or were provided such equipment to work effectively. As one developer reported, "Effective remote collaboration is possible if the company provides the tools to do it. Yes, it means more 'meetings' as you cannot pull people in ad-hoc, but this also lets people structure their time and responsibility better."

Although remote workers do not need office spaces in a studio office, studios might have to sponsor the costs of software and hardware that is vital for game development during pre-production, production, and post-production. For example, Keith Arem's company, PCB Productions, delivered mobile recording equipment to voice actors for video games to ensure consistency across recordings. As he told us in an

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interview, "In a video game, if you have six, eight characters all talking to each other in a room, that room is going to be part of the recording, part of the microphone, how they all sound. So, you can't have the villain on a real expensive mic and the hero on a really cheap mic. It just can't happen. And it's not fair for those actors to buy all that stuff and try to set it up" (personal communication, August 13, 2021).

Arem's comment, as well as those of survey respondents, suggest that studios ought to cover or offset the costs of the individual employees who work from home. Employees do not have the time and costs of commuting, but they might need assistance with improving their home-office environment or the infrastructure that can support it. In Arem's case, there was an added benefit to having an employee deliver recording equipment to voice actors: "For someone to come to their door, albeit 15-feet away and leave equipment, it was a friendly face and they all know us. And so, it was a little bit of an opportunity for us to stay together."

At-Home Distractions and Caretaking Responsibilities

When creating space for understanding developers' concerns, studios must be mindful of additional distractions that often accompany home-office environments. Our study indicates that women and non-binary developers saw a lot more distractions within their home-office environment, aligning with other studies focused on the uneven spread of home responsibilities found throughout the pandemic working conditions more broadly (e.g., Judge, 2021; Power, 2020; Readon, 2021; White, 2021). Combined with the IGDA's initial survey of COVID-19's impact on game developers, we found that the majority of these participants who suffered mental health declines also tended to be caretakers. As one developer told us in our survey, "We spend less money commuting and overall our stress is decreased as long as kids are in school or daycare so that working from home isn't filled with distractions." If studios are supporting fully remote development and have primary caretakers among their teammates, it might be challenging to those latter teammates who are often more disadvantaged within the games industry because of their home environments. Among our follow-up interview participants, game developer Camilla Avellar recalled some physical and emotional tolls for parents on her team.

I saw a lot of my colleagues who have children working at 7:00, 8:00 PM because, "Oh, I couldn't work in the morning because I had to take care of the kids, and I was doing both." At least I would actively say, "Leave. Leave the computer." I know that my team lead would say, "Yeah. No, no. Go rest. Go do something." So we knew that people would tend to just work overtime, either because they feel guilty because they had to take care of their children, or errands, or family matters, or really because they just lost track of time. There was a lot of that. (personal communication, August 19, 2021)

The role of guilt-inducing distractions in the prevention of effective communication and collaboration practices covers a wide berth of possibilities, so no one heuristic is going to offer a catch-all approach to mitigating these issues. However, as noted in our examples above, there are certain broader ways that developers and project leaders especially can approach these challenges in order to better facilitate and address these needs in remote and/ or hybrid workplaces, in particular. There are at least some focused, specific ways developers can best address the challenges that accompany remote and hybrid work, including abandoning previous assumptions about physical meeting spaces and training project leaders to use strategic moderation and listening skills in virtual environments. Especially in this industry, where it appears that the field of technical communication will remain in these virtual and hybrid spaces, equipping these various workers with the right tools and expectations for working in these spaces (as opposed to simply trying to re-create physical experiences/ practices in virtual space) is essential to maintaining both productivity and equity among developers as they continue their remote and hybrid work practices.

FINAL TAKEAWAYS

This article covered major areas of challenge related to remote and hybrid forms of game development, and it provided heuristics for development teams to address such challenges in meaningful and productive ways via technical communication. In addition to news and industry reports, our survey responses and interviews stress that the majority of the games industry desire remote work or the opportunity to work in some hybrid

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capacity, rather than returning to a physical office space. The reality is that more people around the world have access to game development studios because of remote work opportunities, but some developers who are caretakers in their home or have other things that don't allow them to participate as readily in remote work are also going to find it harder to get the access and support they need. Studios are faced with a tension, then: If they want developers to come back into the office, they might not maintain their current workforce, let alone hire new people. Creating responsive technical communication, studios can help resolve that tension by supporting informal, strategic and empathetic communication and collaboration platforms and methods that serve myriad developers. In summary, studios can:

- Implement both informal and formal communication platforms as necessary for social interactions and production decisions in remote and hybrid contexts.
- Foster strategic moderation on such platforms and create (remote) spaces for dialoguing with developers across modes and locations.
- Provide specific support for caregivers working from home as well as provide a means of mitigating other at home distractions/making expectations clear as to when workers are expected to be available without distractions present.

Put differently, while studios can implement and facilitate communication platforms and methods, a constant will remain: Remote work has a higher risk of miscommunication issues and needs to be proactively addressed in order to anticipate issues. Gittins (2022) offered this example of collaboration gone awry due to poor communication, which was compounded by a remote context:

> A bad leader will say, "I need a rock, and an artist will make them a rock. [The leader] will say, "No, I need a small rock." And so they'll make it a small rock and they'll say, "No, I need a small, smooth rock" and then make a smooth rock and then they'll say no, "I need a small smooth blue rock" and finally create the item that they wanted. That's often shown as being a negative impact because of the leader not properly defining what they wanted. It can be very hard to understand all of those small things that you need without coming across as being perfectly micromanaging. And so if you lead

by "why" you say, "Hey, I need a rock to be in this aquarium, and please figure that out." You weren't asking for a small blue rock but you are telling them what the purpose of the asset is. And giving them the power to make those decisions to figure out the best solution and have knowledge to make decisions that you might not understand need to be made at that moment. (Gittins, 2022)

Gittins stressed that studio leaders are responsible for assessing purpose-driven communication practices across in-person and remote contexts that help teams meet outcomes. And, like game development, assessing communication practices is iterative. The decisions that leaders make, the people they hire, and the ways they provide them support and growth opportunities help cultivate teams or cause issues within it. At the helm of the varying technical communication practices in a studio, leaders should be iterating these practices, because platforms are constantly evolving. As one developer from our survey so aptly put it:

> If the team is committed to establishing a remote-first (or at least remote-friendly) culture and ensuring that it is embraced, supported, and planned for with processes and tools, then a distributed development team is more than capable of producing complex software. However, if the culture, norms, and tools snap back to "what we did before" then teams are not likely to be as productive or successful working remotely.

Ultimately, the research findings and heuristics in this article implicate a prolific industry's significant demand for team-based technical communications rendered through platforms and locations. Without paying more attention to this demand, the field of technical communication runs the risk of losing valuable information about creatives who assume and refine technical communication practices through constant iteration for equitable purposes.

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The Technical Communicator as Artist: Rhetoric, Aesthetics, and Form in the Workplace

By Jarron Slater and Jeremy Rosselot-Merritt

ABSTRACT

Purpose: This article describes how the specialized, rhetorical aesthetic theory of form, posited by Kenneth Burke, highlights humanistic and artistic elements of technical communication exemplified in the technical workplace. A specialized way of understanding how types of communication build relationships between author and audience, the theory of form offers a unique way to contextualize how an artist-rhetor creates and fulfills audience desires, expectations, and appetites.

Method: The authors first contextualize technical communication as a field of artistic and creative practice; they then expand that context using Burke's rhetorical aesthetic theory of form as a framework for application and examine that application in the context of the technical workplace, using a self-reported case study from industry as an example.

Results: The rhetorical aesthetic theory of form provides a way of rethinking technical communication practice, emphasizing the humanistic and artistic elements of technical communication in the workplace.

Conclusion: Looking at technical communication with an interrelated view of rhetoric and aesthetics can provide scholars, teachers, and practitioners with new insights for how technical communicators can see themselves and their audiences as complex people who have the capacities for arguing, influencing, and persuading—and also with capacities for drama, story, feeling, creating, and being moved by art.

Keywords: workplace, rhetorical aesthetics, Kenneth Burke, form

Practitioner's Takeaway:

- The Burkean rhetorical aesthetic theory of form, a specialized way of understanding how communications build relationships between author and audience, offers a useful way of finding meaning in technical communication practice as a uniquely artistic, creative endeavor.
- The application of Burkean form can be applied to many areas of technical communication practice, including specialized client-facing work, often represented in proposal-writing processes.
- Training of future technical communicators should consider the rhetorical aesthetic theory of form and its ability to facilitate artistic creativity in practice and constructive relationships between speaker, text, and audience.

INTRODUCTION

In the last several years, many scholars have contextualized technical communication practice through an artistic lens. In this article, we offer Kenneth Burke's rhetorical aesthetic theory of form as a way of contextualizing technical communication practice to achieve three aims:

- First, to expand recent conversations about the relationship between technical communication and art;
- Second, to address challenges in defining technical communication's place in workplace processes—particularly, those dealing with intragroup and intergroup communications, project management, visual design, user experience, and other areas of practitioner interest; and
- Third, to advance continuing discussions of the value of technical communicators in the workplace.

As we will discuss, the Burkean rhetorical aesthetic theory of form offers a compelling framework for practical application. Given the background and rationale above, our paper addresses three specific research questions:

RQ1: How does framing technical communication practice as artistic benefit practicing technical writers?

RQ2: In what specific ways does a rhetorical aesthetic theory of form usefully contextualize technical communication practice?

RQ3: What are the enduring practical implications for the use of a rhetorical aesthetic theory of form?

In what follows, we describe Burke's rhetorical aesthetic theory of form, a theory that can be applied in useful ways to technical communication practice. After discussing potential applications, including a case study, we conclude by showing how this theory of form helps provide an additional voice for and reminder of humanistic aspects of technical communication. Essentially, Burke's theory of form shows the value, usefulness, and practical applicability of technical communication because it bolsters the notion that technical communicators are artists and creative problem-solvers in workplace practice. Seeing connections between rhetoric and aesthetics invites technical communicators to see themselves as artists. Seeing the technical communicator as an artist also implies greater attention to creativity, beauty, playfulness, and style.

Art and Technical Communication

Academic scholarship has seen a recent and well-founded growth of interest in technical communication as an artistic or creative endeavor. Although discussions about technical communication as art or creative endeavor existed prior to 2000 (see, for example, Beck, 1991; Horton, 1992; VanDeWeghe, 1991), analyses of technical communication as a practical endeavor were less about art or creativity *per se* and more about technical communication as acts that are:

- humanistic (Dombrowski, 1995; Kynell, 1999; Miller, 1979; Moore, 1997; Parsons, 1987),
- social (Durack, 1997; Sullivan, 1990; Thralls & Blyler, 1993),
- and/or political (Blyler, 1998; Durack, 1997; Sullivan, 1990).

In the 2000s, though, creativity and art found growing relevance in technical communication scholarship. For example, one argument by Salinas (2002) critiques technical communication's view of visual design and visual rhetoric as one calling for "preset formulae geared toward functionalism that are prescriptive and uncritical" (p. 169). Salinas sees critical savvy as *techne*. Technical communicators—or, as Salinas calls them, technical rhetoricians–must configure images, or engage in the work of making configurations of images rather than seeing them as mere functional(ist) artifacts. Drawing, in part, on the work of James Sosnoski, Salinas says that configuring an image is a "critical act of reading based on analogical thinking that Sosnoski [1995, p. 10] sees as a practical approach to 'building culture,' rather than a conceptual approach to 'an object of investigation called culture'" (Salinas, 2002, p. 171). The act of configuring an image extends one's understanding of the image beyond its functional and material qualities into its cultural and critical qualities and implications.

One of the most notable developments in conceptualizing technical communication as a creative discipline came when Linn Bekins and Sean Williams (2006) argued that it articulates a thorough yet cohesive argument for technical communication as a creative

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endeavor whose creative qualities which, deriving from strong theoretical bases, figure tangibly in workplace application. Noting the importance of the technical communicator's *knowledge-based economy* (see, for example, Johnson-Eilola, 1996), Bekins and Williams (2006) see gaps in many technical communicators' preparation for the *creative economy* when they ask, "How many technical communication curricula include courses in creative writing, fine art, or the psychology of satisfaction and motivation?" (p. 288). Bekins and Williams' question about the "the psychology of satisfaction and motivation" (p. 288) leads us to examine Burke's theory of form, because, as discussed below, Burke is also interested in the question of the psychology of satisfaction and motivation.

Bekins and Williams (2006) also challenge the idea that technical communication necessarily reduces ambiguity and draws attention to another point we will discuss below: the importance of considering the often ambiguous, seemingly enigmatic motivations and desires of the audience. In essence, Bekins and Williams argue that "technical communicators need to begin viewing themselves as members of the creative class to keep current with trends in business, industry, and society more generally" (p. 293). To achieve this aim, they argue, TPC curricula must continue to emphasize rhetorical knowledge yet also encourage the development of what they call "the creative technical communication curriculum" (p. 289)—one that emphasizes subject matter experts who can flexibly build in at least one industry domain; managers who can design and oversee organizational processes; and leaders who can inspire innovation.

Later in the 2000s, 2010s, and early 2020s, evidence of these relationships continued in TPC scholarship. Examples include:

- Describing an email written by a colleague in a faculty member institution's art department by showing common ground between writing and design, visual and verbal communication, and clarity, form, and content (Tesdell, 2008, p. 217).
- Advancing an argument to utilize technical communication as the basis for a publicly facing *responsive rhetorical art* which "subverts versions of expertise that may hold in more well-defined situations—and codified in most rubrics prioritizing efficiency over effectiveness" (Long, 2014, p. 2).

- Observing that using creativity and innovation in pedagogy can "thread together [Gregory] Ulmer's concept of electracy and Cargile Cook's outline of the six literacies [to enable] instructors to best prepare students for the demands of technical communication in industry" (Stephens & Holmevik, 2016, p. 4).
- Studying the sometimes-challenging possibilities of using comics as a medium through which to convey technical information in a so-called "comics-as-medium" approach (Yu, 2020).

A watershed moment in the conversation on technical communication as art came in the 2020 special issue on artistic creativity in technical communication in this journal. In that issue, Chong and Rice-Bailey make the case for studying "how technical communication researchers and practitioners are using artistic creativity in the classroom and workplace" (2020, p. 2), asking "What does artistic creativity look like in contemporary technical communication instruction and practice?" Four articles address that question in different ways. Kostelnick (2020) examines key theoretical and historical elements to artistry in technical communication, offering a series of guidelines for applying artistic principles in practitioner work, and arguing that "the pursuit of beauty continues today in practical communications through the deployment of culturally-based conventions and design principles associated with beauty" (p. 6). Meanwhile, Hardesty and Hollinger (2020) focus on the primacy of creativity and beauty in technical communication, providing concise, usable definitions for those key terms and a rich discussion of their pedagogical and practical implications: "Without conflating beauty and desire," the authors write, "we can understand why beauty and the beautiful are an important part of the scholarly and professional discussion of technical communication. As an object of desire, seeking the beautiful is one way to generate new lines of force in our work, our work products, and our field" (p. 34). These studies that relate beauty and desire to technical communication make a clear space for Kenneth Burke's rhetorical aesthetic notion of form.

In the same issue, Lanius, Weber, Spiegle, Robinson, and Potts (2020) empirically study the idea of how the use of personas—analog representations of target users or audiences—may help study participants in successfully and empathetically completing a creative task. They

found that, despite having little to no effect on creativity in drawings, "because personas generate user-centered attitudes, technical writing and UX professionals can also use them to justify their own organizational legitimacy" through user advocacy and user-centered design (p. 64)—a key finding for practitioners. Finally, another article of considerable interest to practitioners by Kungl, Hargrove, and Hargrove (2020) describes an applied case study of an organization that actively sought to combine technical communication practice (to convey meaning through text), the fine arts (to elicit emotion), and social science (to help develop and reflect an organization's core values) on a specific project. Ultimately, the authors reported affirmative findings—the business case they studied saw positive results from incorporating fine arts and social science considerations in their technical writing process—leading the authors to agree with Bekins and Williams (2006) that technical communicators "can thrive if they more fully position themselves as integral parts of the organization through their creative synthesis and leadership capabilities" (p. 87).

Table 1 provides a snapshot of conceptual relationships between art and technical communication explored in scholarly literature since 2000, along with applications and applicable author(s). Adding to conversations about creativity and art in technical communication, this article's discussion of technical communication and Kenneth Burke's rhetorical aesthetic theory of form shows how contextualizing technical communication practice as artistic helps technical communicators think of and characterize their work in compelling ways.

Burkean Rhetoric and Technical Communication

A number of studies have used the writings of rhetorician Kenneth Burke to develop practices and theories of technical communication. These studies include analyses of technical communication concepts and genres, such as:

- The experimental article (Coney, 1992)
- Document design (Ding, 2000)
- Invention strategies (Todd, 2000)
- Research methodologies (Fox, 2002)
- How rhetorical theory informs technical communication practice (Porter, 2013)
- The US intelligence community (Kreuter, 2015)
- Secret police reports (Stanchevici, 2016)
- X-rays, materialist philosophies, and rhetorical invention (Gibbons, 2019)

Nevertheless, Burke's rhetorical aesthetic theory of form has been seldom discussed in technical and professional communication scholarship. Because that theory has much to offer, we discuss it here. The rhetorical aesthetic theory of form is important, because it implies that the technical writer, as rhetor, is also an artist. In essence, the rhetorical aesthetic theory of form highlights artistic elements of technical communication.

A Rhetorical Aesthetic Theory of Form

While conventional ways of talking about form distinguish it sharply from "content," Kenneth Burke's notion of form deals with the creation and fulfillment of desires, attitudes, expectations, and appetites. People are symbol-using creatures, and a symbolic act has form that (1) invites others to anticipate or hope for something,

Table 1: A snapshot of concepts in creativity and art that scholars have connected to technical communication practice since 2000

Conceptual Relationship	Application to Technical Communication Practice	Author(s) Making the Connection (Year)
Imagery, Rhetoric, and Technical Communication	Technical communicators ("technical rhetoricians") must configure images, or engage in the work of making configurations of images rather than seeing them as mere functional(ist) artifacts; for the technical communicator, critical savvy is *techne*	Salinas (2002)
Technical Communication and the "Creative Economy"	Technical communicators are part of a "creative class" of knowledge workers whose products of work are often necessarily ambiguous	Bekins and Williams (2006)
Technical Communication as the Basis for a "Responsive Rhetorical Art"	When used to create public-facing communications, technical communication as a practice "subvert[s] versions of expertise that may hold in more well-defined situations" (Long, 2014, n.p.)	Long (2014)
Art, Beauty, and Technical Communication	Technical communication as a marketable workplace practice is just as much about art and beauty as it is practical communication	Hardesty and Hollinger (2020); Kostelnick (2020)

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and then (2) satisfies those anticipations or fulfills that hope. In Burke's words, "A work has form in so far as one part of it leads a reader to anticipate another part, to be gratified by the sequence" (Burke, 1968a, p. 124). Form defined in this way is thus fundamentally different from conventional ways of discussing form as an aspect of style or as fashion or manner.

In that sense, form is "the psychology of the audience" (Burke, 1968a, p. 31), as well as a promise made to the reader and the "fulfillment of a promise" (p. 30). Form thus provides an inseparable connection between symbolic action and artistic creation. For example, a writer who says something about a meeting of two people and then goes on to write "in such a way that we desire to observe that meeting, and then, if [that writer] places that meeting before us—that is form" (1968a, p. 31). These expectations, according to Robert Heath (1979), "are the product of accepted patterns of language use and the conventional wisdom of society" (p. 392). Put another way, form is the satisfying of a psychological "appetite" through aesthetic means. Form functions on more of a scale or a spectrum than it does as a binary "on or off" switch. Attention to form enables the rhetor-artist to manage the desires and appetites that people inevitably have.

Drama, Desire, and the Fulfillment of Audience Expectations

Because form emphasizes an audience's experience with a text or work of art, the delight and fulfillment that audiences find in a work does not depend solely on a mere recitation of facts or information, but also comes from watching a "drama" unfold through the creation and fulfillment of desire. The rhetorical aesthetic notion of form does not allow a full separation between form and content, style and information. While people do often desire facts and information, form sees these things through the lens of people's desires for them. Therefore, the rhetorical aesthetic notion of form is potentially an untapped source of power that can be used to influence audiences—and to buoy the power of technical communication and the importance of seeing technical communicators as artists who are managers of desires, attitudes, and appetites.

The theory of form, in part, serves as a summary of the technical communicator's toolkit for analyzing, understanding, and preparing to act within a rhetorical situation. Form works on the macro level of genre, the micro level of figures of speech and other patterns within a sentence, and in between these two extremes. On the level of genre, readers who begin to read, say, a proposal, for example, have certain expectations they want fulfilled. These expectations are, of course, manifold in the sense that readers of a proposal expect certain things from a proposal in general, and they also expect certain things from a particular proposal. Form also works on the micro level, too. A climax, an antithesis, or an antimetabole is a pattern commonly found in science writing (Fahnestock, 1999), but one that is not found on the page or screen as much as it is something shared between speaker and audience (Slater, 2018).

Paragraphs and sentences, too, can be understood from the perspective of form. Form works on the paragraph-level when topic sentences in paragraphs create expectations for the paragraph and when readers have certain expectations about paragraph structure and content. Because Clark and Haviland (1977) and Haviland and Clark (1974) discuss their research about given and new information in terms of the expectations readers have when they read sentences, their work can also be understood from the perspective of form. Understanding how speakers of English expect sentences to begin with given (or old) information and end with or proceed to new information helps technical communicators prepare documents that are more accessible, memorable, and inviting. In other words, since form is a widely applicable general principle that manifests itself in a variety of situations, from the smallest parts of a sentence to the largest kind of genre, it helps to explain the thinking technical communicators do.

Form also provides a foundation for design principles and visual rhetoric. Technical communicators can think about their work as designers and artists in terms of form—balance, repetition or consistency, alignment, proximity or grouping, and contrast, all of which are innate potentialities for fulfillment (see Burke, 1968a). People have the potential to experience and appreciate formal patterns or devices that are found in the symbolic actions of symbol-using creatures. These formal patterns are found in all of the arts (Slater, 2020), including technical communication, visual rhetoric, and design. They include principles such as "crescendo, contrast, comparison, balance, repetition, disclosure, reversal, contraction, expansion, magnification, series, and so on" (Burke, 1968a, p. 46). Technical communicators often discuss visual rhetoric and design principles in these

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same or similar terms. In that sense, form provides a useful, overarching way of understanding an important range of the rhetorical aesthetic work of a technical communicator. Even the formal satisfaction of having promises fulfilled "becomes an allurement, an itch for further developments" (Burke, 1968a, p. 30). That satisfaction that is also an "itch" for something else can increase the credibility of technical communicators and their organizations, and give them a desirable ethos of which clients and audiences want more.

Form, therefore, is a specialized way of understanding how types of communication build relationships between author and audience, and offers a way to contextualize how an artist-rhetor creates and fulfills desires, expectations, and appetites in people—appetites that are latent in human beings and can be awakened by the uses of artistic patterns, or formal devices. Technical communicators employ these artistic patterns in a variety of ways and for a variety of communication types.

In the practical sense, the rhetorical aesthetic theory of form is a lens through which technical writers can re-envision their work in artistic terms—as a means both to reinforce the rhetorical connection to the audience and to negotiate the imminent pressure in industry-based writing toward increasing efficiency. This kind of re-envisionment can significantly bear upon how we think of audience, practice, process, and meaning in technical writing: namely, that technical communicators should see themselves as artists. For practitioners, it may seem less evident at times, thanks to the pervasive pressure to disconnect theory from practice, creation from communication, and art from rhetoric. To see oneself as an artist is to take the initial step toward freeing oneself from the mechanistic pressures imposed by conventions, institutions, and cultural practices.

In what follows, particularly through a self-reported case study based on one of the authors' industry experiences, we demonstrate how Burke's rhetorical aesthetic notion of form illustrates the usefulness and importance of technical communicators by calling attention to the artistic and creative aspects of technical communication without diminishing its communicative aspects.

The Psychology of the Audience in the Workplace

While a technical document is a place where the artistic and psychological processes can happen alongside the rhetorical processes, the combination of artistic and rhetorical processes reveals a complication that humanizes and reifies the technical document as an art form. Although information can be thought of as the content of the art, and form the way in which the information is presented, from the perspective of a rhetorical aesthetic theory of form, information is subsumed to form insofar as it is people who are desiring the information. An overemphasis on information at the expense of form, and its emphasis on desire, leads to what Katz (1992) famously described as an "ethic of expediency," an emphasis on the pragmatic result of a process at the expense of humanistic virtue, sometimes (in its worst iteration) with dangerous, catastrophic effects. This hyperpragmatism, and related efforts to make technical communication as expedient an activity as possible, undercut its potential value in workplace settings. For the technical communicator, the complementary aspects of the psychology of information and form as the psychology of the audience facilitate an important and necessary balance in communicating. These characteristics will become particularly important in the case we describe below.

FORM AND TECHNICAL COMMUNICATION PRACTICE IN THE APPLIED WORKPLACE: A SELF-REPORTED CASE STUDY

Burke's rhetorical aesthetic theory of form provides a basis for contextualizing technical communication practice. Although case studies are generally well represented in the technical communication literature (e.g., DeWinter & Vie, 2016; Haas, 2012; Melonçon & Potts, 2020; Paretti et al., 2007) the term "self-reported case study" has been used in disciplines with strong social science influence outside of technical communication, such as organizational and management studies (e.g., Cantore, 2016), health services (Durand et al., 2015), educational research (e.g., Snyder et al., 1996), and social work (e.g., Singh, 2021). By providing a scenario as a representative example, we seek to show how rhetorical aesthetics can inform the writing process, the connection to a writer's audience, and the value that a technical writer brings to the workplace.

Since technical communication as a field of practice is intrinsically connected to workplace application, the contexts in which that application takes place are crucial. To illustrate one of those contexts, we offer the example of a self-reported case study based on one of the authors'

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previous industry experiences. In terms of Burkean form, the appetites, desires, and psychology of two different audiences come into play in the following case study: those of the external client and those of the group of internal coworkers (the vendor) who were working to define the scope of work for the external client.

Experiential Context: Client-Facing Communication in an Engineering Organization

The principle of form in technical communication—as well as the related centrality of technical communication and the need for administrators to understand the value of technical communicators—is illustrated by one of the authors' industry experiences. This author worked for just over four years in a small, specialized "boutique" engineering firm that focused on project-based engineering and design work that it was contracted to complete for external clients who needed a range of engineering and programming services for manufacturing software and automated production, filling, packaging, and bottling lines in their factories. As a particular genre, proposals are important to this company—and to companies like it—for two reasons. First, the proposal defined the scope of work, the material resources, the people, and the budget and schedule for a specific project. Second, the proposal became a binding document with serious legal and financial implications throughout the life of a project. For example, if the client felt that a certain module of code was part of the scope of work, but the engineering company did not, both parties would first consult the proposal before doing anything else. If a project was taking longer than the client expected and if that delay was cutting into the sales of their product, both the client and the company would look at the schedule in the proposal to determine what went wrong. Although the final decision on what to do in situations like these would take place after much discussion—via email, phone calls, face-to-face meetings, and sometimes (in rare instances) involving lawyers—the proposal was invariably central to those deliberations.

And yet, while the centrality of the proposal was unequivocal in situations like these, two problems often arose in proposal development. First and foremost, there was often a lack of a technical writer in the process. While sometimes a staff technical writer would be included in the writing—or at least the editing and quality-checking—of a project proposal, in many

instances, a technical writer was unfortunately not included. Sometimes a technical writer was not included because of a perceived lack of time, such as when a client wanted bids quickly and there were only a couple of days in which to develop the proposal. At other times, a technical writer was not included because of a lack of planning, such as when the plan for proposal writing did not include the resourcing for a technical writer. Still, at other times, a technical writer was not included because of a perception that a technical writer was not needed at the proposal stage, or when one or more people on the team thought the technical writer would encumber the process by not being technically "competent enough" to contribute substantively to the proposal. This always struck the author who worked at this company as painfully ironic: a company bids on a project using a document that will not only determine the bid's success but also serve as a binding document should they be awarded the project—and yet that team decides to leave their company's foremost experts on documentation and technical writing out of the document creation process.

The second problem that often arose in proposal development was when technical writing itself was devalued. While the proposal was a key document for the company, many engineers and designers neglected the proposal when they preferred their own technical scope of work to working on the proposal. When engineers, designers, and other workers preferred their technical work to writing the proposal, much of the writing of the proposal would then fall on the project managers, people in company leadership, or others who would oversee the work rather than perform the work directly. This shift of work created challenges, because those performing the work were often better at determining how long the work would take and how many people and material resources would be needed to accomplish it. These situations led to the company assuming greater risk on a project because time, budget, and resource estimates (not to mention the editing) may have been less accurate in the proposal.

When a technical writer was included in the proposal process, there was a strong purposive aspect to the technical writer's role. In many cases, one or more of the engineering leads or project managers was familiar with the technical writer's work, often from a past project on which they worked together. In addition, at least one condition was usually true in each situation in which the technical writer was included in the process:

- The technical writer had already been staffed to a long-term project involving the team or client in question,
- There was a great deal of formatting and graphical work that no one else on the team had the expertise to handle efficiently, or
- The client specifically requested that a technical writer be included in the process.

Sometimes, not surprisingly, a combination of those factors may have applied, too. While few on the project team would necessarily have seen the technical writer's role as "artistic" at first glance, the work that the technical writer did had strong aesthetic elements: using styles in Microsoft Word to improve visual design, creating figures in Microsoft Visio and Adobe Illustrator to add visually pleasing visual aids, ensuring a consistent visual branding throughout the document. But artistic elements, to be sure, were not only of the proposal itself; they were also borne in the attitude and mindset that the technical writer brought to their work in writing and designing it. By creating and fulfilling desires, appetites, and expectations, form also creates attitudes—which are incipient actions (Burke 1968b)—in audiences and readers.

Form in Contextual Experience

While not representative of every company's experience, this experience illustrates three common industry realities. First, it illustrates the intrinsic value of technical communication as a field of workplace practice. Second, it demonstrates the fact that inaccurate perceptions of technical communication often lead to an underappreciation of technical communicators' roles. Third, it shows that awareness of the artistic practice enhances the practice of technical communication and the deliverables that result from that practice.

While technical communication is continually important, it is, unfortunately, not always deemed important enough to assign significant additional resources to it, to formalize the process of writing it, or to staff a technical writer to it before it is submitted to a client. The preferences of the engineers, designers, and other employees reveal the principle of form: the engineers, designers, and others did not want to work on the proposal, but they wanted to work on something else. Yet, technical writers are those who prefer the work that others do not, and they are skilled at and knowledgeable about it, because they intuitively understand the principle of form.

The experience also illustrates that inaccurate perceptions of technical communication—and the genres associated with it—lead to an underappreciation of its crucial artistic and creative elements and to a belief (among non-technical communicators) that documentation work, including work on business-critical documents such as the proposal, is often more of a necessary formality and less of a creative activity on par with scopes of work in programming and design. The technical communicator has to work and contribute to industry ecosystems where their work may not always be well understood or appreciated (see, for example, Rosselot-Merritt, 2020).

Finally, this example demonstrates how the technical communicator's artistic practice can translate first to the success of the proposal and subsequently to broader perceptions of the technical communicator's value in the workplace. The success of a proposal is typically judged by whether the primary decision-maker (e.g., a client) decides to accept the proposal. Their decision rests on the extent to which the proposal fulfills desires and expectations, many of which center around not only such obvious elements as scope, budget, and schedule but also around the aesthetics of the proposal— what those in industry would call its "professional appearance," or a part of the answer to the question, "Does this vendor know what they're doing?" This question applies both to technical skill sets and to other business practices that have a bearing on the services the vendor provides. These services include proposals and, once a project has been awarded, documentation. If a proposal is aesthetically displeasing, poorly formatted, or otherwise unprofessional in appearance, clients will not hesitate to say it in practice. From the client's perspective, that unprofessional appearance reflects not only on the vendor's communicative practice but also on their approach to documentation deliverables such as manuals, testing protocols, and so on, once the project has been awarded. And while that relationship may not necessarily extend to the proposed products of work in engineering and other spaces—electrical installations, buildings, bridges, software applications, packaging lines, and so on—clients expect professional appearance in technical communication work products (see, e.g., Ford, 2004) as part of the larger set of vendor-produced deliverables. In other words, the aesthetic functions as an indicator of quality, and an aesthetically displeasing document (or "act," as Burke would broaden that word to say) has a poor rhetorical effect on its intended audience.

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Experiences like these highlight the value of technical writers—and they provide an analogy through which company leadership, middle management, and professionals outside the field of technical communication may understand and articulate that value in other applied settings. Although a detailed pedagogical discussion exceeds the scope of our applied argument in this space, we assert that classroom discussions of technical communication can engage the rhetorical aesthetic theory of form for the benefit of students planning to enter the applied workplace. Explicit teaching of the concept of Burkean form may help technical communicators to be more prepared to meet the needs—by which we mean desires and appetites—of external and internal clients.

This experience also shows that the more people understood the value of technical writers, the more they had an appetite for including technical writers on projects. The project-based company discussed in this section made its money by working on projects of limited scope for a particular client or set of clients. Each of the projects on which the company worked had a defined schedule and, typically, a defined budget. Adding a technical writer to the project would add to the cost, just as having any other person on the project would. At least two factors could lead to a technical writer being included or not on the project. First, the technical writer's work would need to be budgeted into the project, typically at the proposal stage, as part of the defined scope of work. Second, for that to happen, the people writing the proposal would need to know about and understand the value that a technical writer would bring to that project. In that sense, it is a question of value (or money) and awareness. As more people in the company—department managers, project managers, lead engineers, and others with scope-defining and resource-defining authority—became aware of the services that the technical writers provided, the use of technical writers on various projects increased.

The external clients had an appetite for quality work performed within the defined schedule and budget. That meant no cost overruns, minimal deviations from the proposed schedule, high quality of the finished product, and so on. These external clients also wished to show their superiors that there was value in the work their vendor was doing. The psychology of the clients centered around the perceived value of the project. The more value the clients perceived, the happier they were, and the more likely they would not only recommend the vendor for a specific project but seek out that same vendor for work in the future.

Meanwhile, the internal coworkers—the vendor—had an appetite for the work itself. If the client awarded them a contract, people at the vendor were very happy; their appetite was fulfilled. Once the work was awarded, the ongoing, continually measured desire was to complete the work in a way that was satisfactory to the client. That desire led to a close management of the schedule and budget, as well as regular check-ins with the engineers, salespeople, and others involved in the project, including the technical writer, if one was allocated. Like the psychology of the client, the psychology of this internal audience also centered around the perceived value of the project. Nevertheless, sometimes the external client would perceive a value different from what internal coworkers believed was important.

The technical writer would facilitate the fulfillment of these appetites and desires in several ways. First, when a technical writer was involved in drafting, revising, and quality-checking a proposal, they could ensure that it was written persuasively—in a way that appealed to the client's appetites and desires. Second, the technical writers also tended to be very good at understanding the client's psychology—how the client perceived the value of a certain project; this ability to analyze the client's psychology was extremely valuable to the proposal process and helped increase the chances of a successful award. Third, the technical writer took on a cross-disciplinary role not only in the proposal writing process but also in the project work once the project was awarded. The very nature of the technical writer's work required them to interact with and interview multiple stakeholders (both external and internal), meaning they could continually learn about each stakeholder's desires on a particular project and thus help the collective team unite around a shared vision of the project and its value. This was, of course, true regarding the documentation scope of work, yet it was also true on a project management level. Because of their unique, cross-disciplinary positioning within the project team, the technical writers gained insights about their internal and external audiences—and the appetites, desires, attitudes, psychology, and perceptions—that directly and indirectly advanced the success of the project.

In sum, while Burke's theory of form demonstrates the theoretical importance of satisfying the reader's

appetites, fulfilling their desires, technical writers demonstrate the practical importance of those rhetorical moves in ways that fulfill the desires of industry stakeholders on cost, schedule, and quality on a given scope of work. The technical communicator works not just to perform tasks mechanically but to create and fulfill desires artistically. Technical communicators become artists in this way because the act of creating and fulfilling desires leads to artists and audiences having experiences that can lead to increased satisfaction.

CONCLUSION: FORM AND THE APPLIED ARTISTIC CONVERSATION

Because rhetoric and aesthetics are like two sides of the same coin, technical communication should be as much an artistic endeavor as it is a rhetorical one. If rhetoric generally represents a persuasive, argumentative, message-based focus, the aesthetic generally represents a focus on human experience, feeling, and psychology. These are not contrasted as much as they are partners in a dance. The perspective of Burkean form highlights the interconnectedness of rhetoric and the aesthetic, and offers a way of recontextualizing technical writing practice in a way that will benefit both practitioners and scholars. Form helps practitioners to think of their work more humanistically and helps academics to approach technical communication scholarship in a more artistically informed, and thus human-centered, fashion.

Technical communication informed by Burke's theory of form provides another voice arguing that technical communication can be more fruitful and enjoyable, ethical and humanistic. The misunderstanding and devaluing of technical communication can lead to a hyperpragmatism that, while many have warned against (Miller, 1979; Katz, 1992; Burke, 1974), unfortunately, is sometimes still encountered. Technical communicators who focus not just on deliverables but also on a healthy level of artistic practice can improve communication. In this case, form has value even in implicit or less technical terms, such as when a focus on it may help to increase the pleasure that technical communicators find in their work. Adding pleasure in technical writing can mean including well-timed, strategic, and playful stylistic choices that improve, rather than hinder, technical communication (see Butts & Walwema, 2021). Essentially, framing the technical communicator as an

artist facilitates qualities that enhance its chances of success—qualities like effective visual design, rhetorical eloquence, and audience-centeredness.

In sum, Burke's theory of form shows the value, usefulness, and broad applicability of technical communication because the theory of form describes how technical communicators are artists and creative problem-solvers. Thus, the rhetorical aesthetic theory of form (1) expands a widespread, limiting pragmatic view of technical communication common in some industry settings; (2) conceptualizes the nature of technical communication practice more fully; and (3) sees the technical communicator as an artist and technical communication as artistic creation in order to free technical communicators from the mechanistic pressures imposed by conventions, institutions, and cultural practices.

As we analyzed our case and considered implications of the rhetorical aesthetic theory of form for workplaces more generally, we recognized two areas of inquiry that merit further research: (1) how organizations define "effective utilization of [their] technical writers" and (2) how the theory of form may benefit technical writing managers. First, defining "effective utilization" in technical writing is essential because different organizations will view productivity and effectiveness differently. For instance, a project-based organization may focus on the "billable percentage" or "billable hours"—the amount of time in a technical writer's work week that that writer's work can be billed to a client. In most cases, proposal work is not actively billed to a client, simply because there is no contract for services in place at that stage. In other organizations (such as those that market and sell a specific product or service–not "billable time" as in a project-based company), the value of the technical communicator may be measured by the necessity of the deliverables they produce. In those organizations, technical writers are often categorized as a "cost center" much as a marketing group would be: Their work is not "bringing in money" per se, yet the products of their work (proposals, manuals, social media posts, and so on) are imperative to the success of the company.

The second area—what the implications of the theory of form are for managers of technical writers and technical documentation groups—is also a valuable area to consider, particularly from an organizational perspective. Our analysis of this rhetorical theory, as

well as the case on which our elaboration of it is based, focuses primarily on the perspective of the practicing technical communicator. Solid research on management perspectives is well precedented in TPC scholarship (see, for example, Amidon & Blythe, 2008; Kimball, 2015). The theory of form also has much to say to current discussions of rhetorical leadership in technical communication, such as those described by Olson (2009). Additional research—particularly empirical studies that provide one or more firsthand accounts of management-level views on rhetorical-aesthetic conceptions of technical communication (or, put another way, the potential value of such conceptions to people in management roles)—would help clarify such managerial implications more fully. Interviews of managers would also offer insights into how specific organizations define *productivity* in terms of technical writing.

Finally, while different scholars discuss rhetoric and technical communication from varying perspectives, we advocate the continued relevancies of rhetorical approaches that emphasize the inseparable relationship between rhetoric and the aesthetic. We have described the need for a fresh look at rhetorician Kenneth Burke and his theory of form, which sees an inseparable relationship between rhetoric and the aesthetic, implying that technical communicators are artists, and we call for more studies linking Burke and other rhetoric scholars to technical communication. After all, looking at technical communication with an interrelated view of rhetoric and aesthetics can provide new insights for how technical communicators can see themselves and their audiences as creative problem-solvers who argue, influence, and persuade—and who create, feel, experience, move, and are moved by art.

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From Interpersonal Privacy to Human-Technological Privacy: Communication Privacy Management Theory Revisited

By Xiaoxiao Meng

ABSTRACT

Purpose: Communication privacy management (CPM) theory is a major theory explaining the tensions between disclosing and concealing private information in interpersonal communication. By considering differences in interpersonal and human-technology information disclosure and drawing on existing work related to privacy and technology, this article presents CPM theory as a broad theoretical framework for human-technology privacy boundary management.

Method: This research employed a speculative theoretical approach by drawing on existing literature and synthesizing it to both apply and extend CPM theory's propositions to human-technology privacy boundary management.

Results: CPM theory can be applied to understand the dynamics of human-technology information disclosure and should incorporate technological literacy as a key consideration in human-technology privacy boundary management. Legal ties characterize human-technology privacy boundary coordination instead of social ties. Additionally, in human-technology information disclosure contexts, CPM theory should provide guidance regarding managing third parties that may gain access to information.

Conclusion: CPM theory is the most comprehensive framework for how individuals manage privacy boundaries, be it in interpersonal or human-technology contexts. By considering technology as a property of technological actors instead of an actor itself, CPM theory in human-technology contexts becomes a flexible theoretical framework for understanding information disclosure and privacy boundary management, both for existing technologies (e.g., social media, online shopping platforms, artificial intelligence, Internet of Things) and future technologies.

Keywords: communication privacy management (CPM), human-technology, information disclosure, privacy boundary management

Practitioner's Takeaway:

- Practitioners should consider the six rules of human-technology boundary management when developing communication technology-related privacy policies: namely, cultural expectations, socio-demographic variables, motivations, situational context, risk-benefit analysis, and technological literacy.

- Newer technologies enable private information flows among technological platforms. Practitioners need to understand the ease and scale with which private information can be transmitted across platforms to design appropriate privacy boundaries that balance business interests with user expectations of acceptable private information disclosure.

Xiaoxiao Meng

INTRODUCTION

The issue of privacy intrusion in the Digital Age has gained significant attention in technical communication (Frost, 2021; Green, 2021). Technical communication scholars, particularly human-computer interaction scholars, are increasingly paying attention to privacy issues (Luo et al., 2022). For example, in the context of extended reality, the importance of privacy and security issues in the design of technical instructions has rapidly increased due to the risks of devices continuously collecting data from users (Rantakokko, 2022a). There appears to be an emerging consensus in technical communication that, with the further development of artificial intelligence or data mining, privacy and security issues will become increasingly prominent (Rantakokko, 2022b). Therefore, finding ways to protect and manage privacy in technological contexts has become urgent (Acquisti et al., 2014; Guzman et al., 2019). However, to the best of my knowledge, there is currently little theoretical guidance for technical communication researchers and practitioners on privacy management in technological contexts. As such, this article extends one of the most widely used theories in privacy studies, CPM theory, to build an integrated theoretical framework to guide and assist researchers and practitioners in understanding and protecting user privacy in technological contexts.

The CPM theory originated as communication boundary management (CBM) theory to explain how married couples manage private information disclosure with their spouses (Petronio, 1991). Later, Petronio (2002, p. 2) broadened CBM theory into CPM theory to emphasize the centrality of privacy in interpersonal contexts. As a creator and developer of this theory, Petronio (2002, p. 86) argued that "CPM theory provides a systematic approach to understand disclosure about the self by focusing on the process of privacy management," and other scholars have agreed with this view (Colaner et al., 2021, p. 3). Following its introduction, CPM theory emerged as a major theory examining the process of privacy boundary management in face-to-face interpersonal communication (Steuber & Solomon, 2011). As media technology evolved, interpersonal communication became increasingly mediated. CPM researchers then extended their study of privacy boundary management to private information disclosure through technologically mediated channels (Colaner et al., 2021; Zhang & Fu, 2020).

Although researchers have further expanded CPM theory to technological contexts by studying social media, the key focus is still on how individuals manage privacy boundaries in interpersonal contexts. Although Petronio later acknowledged that new technologies have influenced the theory, it remains limited to interpersonal communication mediated through social media (Petronio & Child, 2020). However, scholars have increasingly recognized the importance of privacy boundaries with technology because of the prevalence of technology in everyday life. The high-profile Cambridge Analytica scandal involving Facebook demonstrated how personal information disclosed to technological actors can be harvested and misused (Breuer et al., 2020). As algorithm-driven platforms (e.g., Google, Uber, Amazon, Alibaba, and Tencent) become increasingly ubiquitous and indispensable for everyday living, concerns over private information disclosed to such technological actors are likewise increasing.

A small but growing number of scholars agree that CPM theory is suitable for human-technology contexts and have applied CPM theory to examine how users manage their privacy with technology. Researchers explored users' privacy management strategies in e-commerce platforms (Metzger, 2007); their trust and willingness to use cloud-based storage applications (Widjaja et al., 2019) and the Internet of Things (Pal et al., 2020); and users' perceptions and behaviors regarding data ownership, privacy rules, and turbulence. Each of these elements comprise the tenets of CPM theory (Zimmer et al., 2020).

Although researchers have extended CPM theory to include information exchange between individuals and technology, there is little work examining how the differences between the nature of human-technology and interpersonal communication affect CPM's applicability to human-technology communication. Private information in the context of human-technology communication is conceptually broader (Metzger, 2007) and includes social media profiles, online or app search history, time spent on websites or applications, and past purchases or subscriptions. Interpersonal information disclosure is governed by social norms and expectations, but such norms do not characterize human-technology information disclosure. Furthermore, the extent of the revelation

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or concealment of personal information in human-technology information disclosure is also likely related to technological literacy. Technologically literate individuals can better leverage technical affordances to conceal information. Hence, the extent to which CPM theory, which was developed based on the nature of interpersonal communication, can adequately account for human-technology information disclosure is unclear.

This article differs from previous studies on CPM in technological contexts in two aspects. First, most existing studies examined differences in privacy management in specific technological contexts compared with interpersonal communication, but they examined only specific aspects of CPM theory and did not comprehensively examine the tenets of CPM theory. Second, this article establishes a macro-analytical framework instead of exploring micro-level privacy management strategies, privacy concerns, and information disclosure intentions for specific technological contexts, which is more useful for technical communication practitioners who may not be able to control the specific technological contexts within which they work.

An added advantage of CPM theory as a macro-theoretical framework is that it can accommodate many existing theoretical perspectives and empirical work in the broader online and digital privacy literature. In doing so, existing work related to technology and privacy can be more coherently organized. Gaps and opportunities to expand theoretical understanding of human-technology privacy management can also be more easily identified when there is a coherent theoretical framework that relates existing work with one another. In the sections that follow, I detail how the main tenets of CPM theory are also adequate for theorizing human-technology privacy management as a broad framework and can unify many existing theoretical perspectives of online privacy management. I then conclude with a general discussion of CPM as a broad theory of individual privacy boundary management and outline the potential limitations of this work.

METHODOLOGY

This research tries to determine the extent to which CPM theory developed in interpersonal communication contexts can be applied to technological contexts. I first conducted a systematic literature review (Zhou, 2023) to better identify existing research, work, and perspectives on the connection between CPM theory, technical communication, and interpersonal communication. The systematic literature review is recognized as an efficient and acceptable way for categorizing and evaluating existing work.

I first collected literature concerned with CPM and privacy issues in technological contexts to explore the potential for synthesis. I performed a search limited to publications published within this timeframe from January 1991 to December 2021, and I used major academic search engines (i.e., EBSCO, ScienceDirect, JSTOR, Emerald Insight, and Google Scholar) to retrieve relevant literature. The search terms used include "communication and privacy," "platform privacy," and "technology and privacy." Several criteria were considered when screening the literature. For example, articles needed to be written in English, use privacy as the core theme, be in the field of social science (where CPM originated), and be peer-reviewed. The process of article collection and filtering ultimately yielded 108 articles for further analysis.

Next, I employed a speculative approach to theorizing to analyze the literature. The speculative approach is a form of reasoning that is based on but goes beyond empirical observations (Bryant et al., 2012). This approach is about reflecting on the essence and value of things to make a qualitative judgment about them, meaning what they ascribe to and what their position is in the world (Ross, 2017). The speculative approach is not a rejection of the empirical approach but a recognition of its inherent limitations, such as its heavy focus on textual data. Through logical reasoning, such as deduction, the typical characteristics of things are compared and identified, and the essential characteristics of things that are consistent or different from each other emerge.

Speculative theorizing as a methodology is less common and differs from more well-known methodologies, such as grounded theory. Here are the key differences between the two: Grounded theory is based on an inductive approach, where theories and explanations are derived from empirical data. It emphasizes building theories grounded in the data collected from the research participants. On the other hand, the speculative approach is more deductive and hypothetical in nature. It involves proposing speculative explanations, making conjectures, and exploring

possibilities without necessarily relying solely on empirical evidence. Grounded theory aims to provide an in-depth understanding of a particular phenomenon or social process. It seeks to generate theories that explain the observed empirical data. The speculative approach, on the other hand, may be used to explore possibilities, imagine alternative futures, or challenge existing assumptions or theories. It may be employed to stimulate creativity, critical thinking, or to generate novel ideas. Given the lack of theoretical familiarity with privacy in technological contexts in many fields, including technical communication, the utility of the grounded theory approach is potentially limited. Thus, the speculative approach to reflecting on and extending CPM into fields like technical communication is more appropriate at this juncture, and future theorization can adopt a grounded theory approach for further development.

The speculative reasoning approach follows three steps: seeking a common ground, counterfactual reasoning, and prefactual reasoning (Huang et al., 2021). Seeking a common ground refers to reaching a consensus about the features of technological contexts and assumptions of CPM. Counterfactual thinking refers to "imagining how events could have been different," (Huang et al., 2021, p. 1), such as, "If I hadn't gotten caught in that traffic jam, I would have arrived at the train station on time." Prefactual thinking concerns "how things will vary from the current reality" (Huang et al., 2021, p. 6); prefactual thoughts take the form, "If action X is taken, it will lead to outcome Y."

Following the steps of speculative reasoning in the Socratic tradition (Verene, 2016), I first examined the consensus about the features of technological contexts and assumptions of CPM. For example, scholars contend that CPM assumes a dialectical relationship between privacy exposure and privacy protection, which is reflected in the circular system of boundary coordination, rule development considerations, and boundary turbulence. Then, I engaged in counterfactual reasoning to see which assumptions of CPM would have been changed if CPM theory had not been proposed in interpersonal communication. For example, I explored the possibility of private information disclosure for the sake of enhancing emotional ties in human-technology interactions. Lastly, I engaged in prefactual reasoning to see which assumptions would be satisfied if CPM theory were used in a technical context. I revised the original

propositions of CPM technological contexts using counterfactuals but kept the original propositions that remain consistent in technological contexts. Detailed processes of speculation and argumentation are shown in the results.

Speculative reasoning can be applied to the field of technical communication studies. First, when anticipating user behavior, speculative reasoning allows researchers to anticipate and understand user behavior in response to new technologies. By speculating about how users might engage with and adopt new technical communication tools, researchers can gain insights into user preferences, expectations, and challenges. This knowledge can inform the design and implementation of user-friendly and effective communication systems. Second, speculative reasoning can help researchers examine the broader societal impact of technical communication. By speculating about the potential consequences and implications of technological advancements, researchers can assess technology's influence on social structures, cultural practices, and power dynamics; this enables a critical examination of the social, political, and economic implications of technical communication, and supports the development of responsible and sustainable practices.

In summary, speculative reasoning offers valuable insights and perspectives to technical communication research. By engaging in speculative thinking, researchers can explore future possibilities, address ethical concerns, inspire design innovation, anticipate user behavior, and examine societal impact. This approach enriches the field of technical communication and enables researchers to remain proactive and responsive to the dynamic nature of technology and communication.

Six Foundational Considerations in Human-Technology Boundary Management

CPM proposes five foundational considerations for rule development to coordinate privacy boundaries among individuals: (a) cultural expectations, (b) gender differences, (c) motivation for revealing and concealing, (d) situational context, and (e) risk-benefit in revealing and concealing information (Petronio, 2002, p. 37). Gender differences in CPM theory, although not explicitly articulated, refer to cisgender differences. CPM theory, to the best of my knowledge, has not extended the conceptualization of gender differences to other gender identities, such as transgender or non-binary

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identities. As such, the discussion of gender differences in rule development and privacy boundary coordination in this research is biased toward cisgender individuals and may not be completely applicable to other gender identities. Theorizing beyond the cisgender category is important to ensure greater inclusivity, but it is beyond the scope of the present article.

Much of existing literature examining online or digital information disclosure relates to the process of rule development and how individuals manage privacy boundaries with technology. For example, studies on online or digital information disclosure employing contextual integrity theory (Nissenbaum, 2010) are more concerned with how situational context influences disclosure, while those employing privacy calculus theory (Culnan & Bies, 2003) broadly examine the risk-benefit of personal information disclosure. Like CPM theory, the theoretical connotation and logic of contextual integrity theory and privacy calculus theory make considerations for situational context and risk-benefit in relation to revealing and concealing information, which shows that CPM theory has the potential to unify other existing theories of network privacy.

I further propose a sixth foundational consideration, technological literacy, to CPM theory's theorization of human-technology privacy boundary management. Information disclosure in human-technology contexts is likely to vary with differences in technical skills and knowledge because of differences in individual capability to effectively use technical means or solutions to control personal information. In the following sections, I detail how the five foundational considerations for rule development proposed in the original CPM theory in the interpersonal context as well as my proposed sixth consideration of technological literacy can be used as a broad framework of human-technology information disclosure.

Cultural expectations

Privacy is a culturally specific phenomenon. People are socialized into certain culture-specific privacy norms, and those norms are foundational to their ideas of privacy (DeCew, 1997). The importance of privacy hinges on cultural expectations (Altman, 1977) that inform ideas about appropriate privacy boundaries and their formation (Petronio, 2002). Empirical studies have examined the role of culture in human-technology information disclosure, providing evidence of the important role that culture plays.

For example, Liang et al. (2016) found that privacy settings were more effective in encouraging self-disclosure of geolocation information on Twitter for collectivist societies than in individualist societies, and the influence of cultural values on self-disclosure of Twitter geolocation information was conditional on trust. Another study examining perceptions of privacy-convenience trade-offs for facial recognition technology in China, Germany, the United Kingdom, and the United States found the Chinese to be the most accepting of this technology, while Germans were the least accepting (Kostka et al., 2021). A systematic meta-analysis also found that culture moderates the relationship between privacy concerns and protection behavior (Baruh et al., 2017). These findings suggest that—similar to the interpersonal context—CPM theory as a broad framework of human-technology privacy management should also consider the role of culture in how individuals form privacy boundary rules with technology.

Socio-demographic variables

A foundational consideration for boundary rule development in CPM theory in interpersonal information disclosure contexts is gender. According to Petronio (2002), women and men develop different rules from their own vantage points to regulate interpersonal privacy boundaries. In human-technology contexts, evidence suggests similar gender differences in personal information disclosure. Women are more willing to reveal their favorite music, books, and religion on social network profiles than men, whereas men are more likely to disclose their phone numbers (Tufekci, 2008). Additionally, women are, generally, more concerned about privacy risks than perceived benefits in online disclosure, while men focus on utilitarian benefits instead of hedonic benefits (Sun et al., 2015). A recent study has found that gender moderates the relationship between privacy concerns and self-disclosure on social network sites (Zhang & Fu, 2020). It should be noted that most of the literature on gender differences and privacy implicitly consider gender as a binary construct, and these findings may not be applicable to non-binary genders.

However, in addition to gender, scholars have found that other demographic factors such as age, education, and income are often related to online privacy skills and

literacy (Park, 2013), and these skills affect how people cope with privacy issues (Gerber et al., 2018). For example, studies have found age differences in privacy concerns and privacy protection when using Facebook (Van den Broeck et al., 2015). These findings suggest that socio-demographic factors besides gender can also influence human-technology privacy management. Considering socio-demographic differences will expand CPM theory's potential, as a broad framework for understanding how individuals draw privacy boundaries with technology, to explain boundary rule formation in human-technology contexts. Thus, this article refers to this element as "socio-demographic variables" rather than the "gender differences" originally proposed in Petronio (2002), because the concept is broader than gender in the context of this article.

Motivations

Often, people make behavioral changes based on specific motivations when faced with risks (Rogers, 1975). Motivations such as "reciprocity, liking, and attraction" influence individuals' privacy boundaries and disclosure in interpersonal contexts (Petronio, 2002, p. 54). The desire to express emotions (Jones & Archer, 1976), strong subjective norms (Heirman et al., 2013), enjoyment, self-presentation (Krasnova et al., 2010), and social support (Waters & Ackerman, 2011) are other motivations to share and disclose personal information. In the interpersonal context, motivations for information disclosure appear to be influenced by social and psychological considerations.

However, in human-technology contexts, especially in technologically driven societies, motivations for disclosing personal information can also include the desire to fulfill basic needs, such as using shopping platforms or mobile payment applications. Disclosing personal information in human-technology contexts can also fulfill self-esteem needs, such as using artificial-intelligence-driven face editing applications. Motivations, therefore, remain an important boundary rule formation consideration in CPM theory as a broad frame of human-technology privacy management, but the range of motivations can expand beyond social-psychological motivations to incorporate basic and self-esteem motivations for the framework to be a more comprehensive account of human-technology privacy management. In the context of technical communication, there is a need for practitioners to understand users' needs for new technologies beyond their psychosocial motivations. Here, we can also refer to Maslow's hierarchy of needs, including physiological needs, safety needs, love and belonging needs, esteem needs, and self-actualization needs. Technical communication practitioners should also consider users' needs for security and privacy when developing technology or software.

Situational context

CPM theory recognizes that privacy rules in interpersonal privacy management are not static, general rules; rather, these rules are often influenced by specific contexts and situations. The three broad categories of contexts or situations that Petronio (2002) identified in interpersonal information disclosure include traumatic events, therapeutic situations, and life circumstances. The role of context in human-technology information disclosure has mostly been examined using contextual integrity (CI) theory (Nissenbaum, 2010). By linking personal privacy protection to information regulation protection in specific contexts, CI theory provides a conceptual and analytical framework for assessing the flow of personal information to explain why certain patterns of information flow are acceptable in some contexts but not others (Zimmer et al., 2020).

Empirical research related to human-technology privacy management using CI theory falls into three broad categories: investigating online media companies such as Facebook (Hull et al., 2011; Shvartzshnaider et al., 2018), examining how context influences sharing of personal information and privacy expectations (Hoyle et al., 2020), and understanding how new technologies such as biometric technologies (Norval & Prasopoulou, 2017), contact tracing platforms (Vitak & Zimmer, 2020), and the Internet of Things (Apthorpe et al., 2018) influence the flow of personal information. CPM theory, as a broad framework to understand how users form boundary rules in human-technology information disclosure, can leverage CI theory and its associated research to better account for the role of context in human-technology privacy boundary management.

Risk-benefit analysis

Privacy-disclosure benefits and risks are key considerations in CPM's theorization of how individuals decide on boundary rules when managing interpersonal privacy. Benefits such as "self-clarification, social

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validation, relationship development, and social control" are weighed against the level of risks of real or hypothetical repercussions (Petronio, 2002, pp. 66–67). In the context of human-technology information disclosure, there is already a rich body of research based on privacy calculus theory examining risk-benefit considerations. Privacy calculus is a key theory to explain the privacy paradox phenomenon in which users' concerns about online privacy risks do not correlate with their online behaviors (Chen, 2018). The theory posits that users calculate tradeoffs between the potential costs and benefits of self-disclosure before deciding to reveal personal information online (Culnan & Bies, 2003).

Scholars have applied privacy calculus theory to social platforms to explore the costs and benefits of online self-disclosure (Dienlin & Metzger, 2016; Krasnova et al., 2010; Lee & Yuan, 2020). Beyond social media, privacy calculus has been applied to understand how consumers balance privacy risk beliefs and personal interest in online transactions (Dinev & Hart, 2006), how consumers respond to smartphone applications that collect driving behavior data (Kehr et al., 2015), how crowd-funders weigh the need for medical crowdfunding support against perceived privacy risks (Gonzales et al., 2018), and how users balance the tensions between perceived privacy risks and better personalized service in the context of the Internet of Things (Kim et al., 2019). CPM theory, as a broad framework of human-technology privacy, can incorporate privacy calculus theory and its associated empirical research to understand how individuals assess risks and benefits in boundary rule formation within human-technology privacy management contexts. To decrease users' perceptions of privacy risks, technology providers (such as cloud storage providers) should give users mechanisms to protect their privacy and security. At the same time, cloud storage providers may want to offer more functions and better services to improve perceived benefits or utilities. Low perceived usefulness and high technical utility are the main rules that users consider when sharing information.

Technological literacy

For CPM theory to be a viable framework for human-technology privacy management, the role of technological literacy in boundary rule formation is important. Spilka (2009) emphasized the importance of digital literacy for technical communication in the 21st

century. Digital literacy is also important for technical communication practitioners working in privacy in technological contexts. Unlike interpersonal information disclosure, personal information disclosure between individuals and technology requires technological knowledge and skill or technological literacy, meaning knowledge of and skills in computer-related and technical-related functions (Bunz, 2003). Park (2013) examined the role of three types of digital literacy— including internet familiarity, surveillance awareness, and policy understanding—in managing online privacy behaviors and determined that users with a high level of knowledge are more likely to exercise information control than those with a low level of knowledge.

Studies have also found that some users disrupt Facebook's algorithm customization by providing inaccurate personal information (Bucher, 2017), while others manage privacy boundaries through strategies such as deleting browsing history (Young & Quan-Haase, 2013). Less technologically literate individuals may not understand how technology works and are likely less adept at using technological means to manage online privacy (Büchi et al., 2016), resulting in greater reluctance to disclose information through technological platforms or applications. Therefore, for CPM theory to be a viable framework for human-technology privacy management, it should incorporate technological literacy as a foundational consideration in boundary rule formation. Improving technological literacy is closely related to the practice of technical communication, especially in communicating the relationship between algorithms, design principles, and the user experience with technology and privacy to the public and industry professionals.

Three Steps in Boundary Coordination in Human-Technology Privacy Management

Boundary coordination is the second type of rule management process under CPM theory. There are two types of privacy boundaries: personal boundaries where private information is wholly self-managed and has not been revealed, and collective boundaries where private information has been disclosed to others and is co-regulated (Petronio, 2002). CPM theory focuses on collective boundaries in interpersonal information disclosure, which are coordinated using three types of management rules that coordinate boundary linkages, boundary permeability, and boundary ownership

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(Petronio, 2002). Boundary linkage considers who and how people become privy to personal information, which implicates the "breadth, depth, and amount of private information" (Petronio, 2002, p. 99) that can permeate these linkages. The nature of boundary ownership for such information depends on both linkages and permeability.

The CPM theory's original focus was interpersonal privacy management; thus, it considers only human actors in theorizing boundary coordination. In human-technology contexts, non-human actors can also receive an individual's personal information. For example, when an individual uses a ride-hailing mobile application such as Uber, personal information such as name, mobile number, and geo-location information is typically provided to the driver through the application. Not only are the individual and the driver privy to such information, the individual's mobile phone, the remote server which receives the ride-hailing request for dispatch to a driver, and the driver's mobile phone are all privy to the information. The collective boundaries of such personal information are coordinated by both human and technological actors. In the sections that follow, I expand on CPM theory and boundary coordination in human-technology privacy management through the three types of management operations it theorizes, namely, boundary linkages, permeability, and ownership.

Boundary linkage coordination management

Boundary linkage coordination in human-technology privacy boundary management falls into two major categories: linkages involving the individual who discloses personal information to both human and technological actors, and linkages involving disclosure to only technological actors. An example of the former would be the disclosure of personal information on dating platforms, such as Tinder, where personal information is disclosed to technological actors, such as one's mobile phone and Tinder's backend servers, as well as other human users. An example of the latter would be the disclosure of personal information on online shopping platforms, such as Amazon, where personal information is disclosed only to technological actors except in occasional instances, such as seeking customer service support.

When boundary linkages are made, CPM theory posits that all who are linked have the potential to divulge the disclosed information, even though the information is generally considered the discloser's property; as such, collective negotiation of rules or the introduction of new linkages into existing rules is necessary (Petronio, 2002). According to CPM theory, the nature of boundary linkages depends on both the proportion of personal information and the strength of social ties. The greater the proportion of personal information a discloser contributes and the weaker the strength of social ties in boundary linkages, the less power and control the discloser can exert over disclosed information.

However, in human-technology information disclosure, technological actors do not form social relations with human actors; social ties cannot shape the nature of boundary linkages between human and technological actors. Many of the rules in CPM theory influencing boundary linkages (such as confidant selection, linkage timing, topic selection, personality characteristics, and acquisition of private information [Petronio, 2002]) are inapplicable to boundary linkages with technological actors. Instead, I contend that, because of differences in interpersonal and human-technology information disclosure, the nature of boundary linkages with technological actors in CPM theory as a broad framework of human-technology privacy management is shaped not just by the amount of information human actors disclose but also by technology affordances and legal ties. By legal ties, I refer broadly to the legal obligations between social and technological actors in coordinating privacy boundaries.

Technology affordances constrain privacy boundary possibilities in human-technology privacy management because the extent to which individuals disclose personal information to technological actors also depends on what the technology allows to be disclosed. I conceive affordances broadly as the "multifaceted relational structure" (Faraj & Azad, 2012, p. 254) between technology and users that enables or constrains the range of possible behavioral outcomes in a particular context. For example, selective disclosure of location information from some mobile applications but not others is possible only if the technology affording the concealment of such personal information is available to the individual. This is a reminder for software developers to provide users with the capability to selectively disclose information, while technical communication practitioners should pay attention to explaining how to exercise this capability.

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Furthermore, technology affordances also offer the potential for severing boundary linkages, a possibility that is unlikely to exist in interpersonal boundary linkages. For example, technology can afford users the ability to delete personal information. Through technological affordances, human-technology boundary linkages can be established and severed as information is disclosed and deleted. In contrast, interpersonal boundary linkages are near impossible to sever unless recipients of disclosed personal information can remove the disclosed information from memory. Technology affordances can also provide a temporal dimension to boundary linkages, such as allowing the automatic deletion of browsing or purchase histories disclosed to technological actors after a predetermined period. Technology affordances in CPM theory offer new ways of thinking about boundary linkages, such as linkage severance and linkage temporality. Technical communication practitioners should explore and communicate strategies on how to leverage the affordances of technology to help users protect their privacy.

The nature of boundary linkage coordination in the human-technology context also differs from the interpersonal context because coordination is mostly shaped by legal ties instead of social ties. Petronio (2002) noted that weak social ties reduce the obligation to preserve private information. Because social ties do not exist between social and technological actors, boundary linkage coordination is mostly shaped by legal ties; weak legal ties reduce the obligations of technological actors to protect private information. The strength of legal ties can vary according to the strength of specific privacy policy agreements between users and technological actors, or overarching regulations enacted by legal institutions, such as the European Union's General Data Protection Regulation (GDPR) law. If such agreements or regulations are absent or poorly considered, legal ties are likely to be weak, and technological actors have fewer obligations to protect private information.

Because boundary linkage coordination with technological actors is mostly shaped by legal ties, third parties who are not recipients of disclosed personal information do not form a boundary linkage, based on CPM theory's definition of boundary linkages. However, these third parties may also influence boundary linkage coordination, despite not forming boundary linkages through information disclosure.

Examples include legal officers, policymakers, or non-governmental organizations (NGOs), such as the Electronic Frontier Foundation (EFF) that advocate digital privacy rights. Considering the roles of relevant third parties in boundary linkage coordination potentially enriches CPM theory as a broad framework of human-technology privacy management because they offer an additional pathway to coordinate boundary linkages. On a separate note, in the interpersonal context, considering the roles of relevant third parties such as counselors and mediators also opens new areas of inquiry in interpersonal boundary linkage coordination because such parties also offer an additional pathway to the coordination of boundary linkages based on professional instead of social ties.

Boundary permeability and ownership

In privacy boundary coordination, beyond linkage coordination, CPM also theorizes boundary permeability and ownership coordination. Permeability considers how personal information can cross boundaries, while ownership considers legitimate possession and control rights to personal information (Petronio, 2002). As discussed in the previous section, human-technology privacy management is mostly characterized by legal ties instead of social ties. Therefore, boundary permeability and ownership are also coordinated based on legal ties, such as privacy policy documents that users of technology generally must accept before they can exchange personal information with technological actors.

Privacy policy documents specify how technological actors can use information that users provide to them. Under CPM, as a broad framework of human-technology information disclosure, these documents constitute codified forms of rules on boundary permeability and ownership coordination. Users are unable to negotiate such rules individually with technological actors, but they can involve third parties such as the government or NGOs to mediate or negotiate on their behalf. The determination of access and protection rules in boundary permeability coordination and the definition of privacy borders in boundary ownership in human-technology information disclosure can also become a tripartite model involving human actors, technological actors, and mediating actors who do not form boundary linkages through processes of information disclosure, such as governments

and NGOs. To theorize boundary permeability and ownership in CPM theory as a framework for human-technology privacy management, it may be necessary to draw on literature in legal studies.

However, from a communication perspective, the influence of legal ties on boundary coordination implies that how users manage boundary permeability and ownership coordination with technological actors can also be shaped by the extent to which individuals understand their legal rights to personal information ownership and sharing. Information processing theories, such as the elaboration likelihood model (ELM) (Petty & Cacioppo, 1984), can help explain the influence of perceptions of the law on individual boundary permeability and ownership coordination with technological actors, especially perceptions of privacy policy agreements. Though the content of every privacy policy agreement is the same for every user, differences in how individuals process the information in such agreements can influence their understanding of the boundaries of permeability and ownership. For example, individuals who process privacy policy agreements using the central processing route, as opposed to the peripheral processing route as theorized by ELM, may understand the boundaries of ownership and permeability differently with technological actors. Incorporating information processing theories into CPM theory provides a more nuanced understanding of how the law influences boundary coordination in human-technology privacy management from a communication perspective.

Boundary Turbulence in Human-Technology Boundary Management

The third type of rule management process under CPM theory is boundary turbulence. In interpersonal information disclosure, individuals may engage in various considerations to form rules about privacy boundaries and then coordinate boundaries using these rules. However, boundary coordination is a complex process; coordination failures are inevitable at times because of the inability to develop, carry out, or enforce rules in coordinating linkages, permeability, and ownership (Petronio, 2002). CPM theory identifies six factors in interpersonal privacy management that can cause boundary turbulence: intentional rule violations, boundary rule mistakes, fuzzy boundaries, dissimilar boundary orientations, boundary definition predicaments, and privacy dilemmas (Petronio, 2002).

Many of these factors that can cause boundary turbulence in interpersonal privacy management often result from differing ideas and expectations of appropriate social, cultural, or ethical norms. In human-technology privacy management, if privacy policy documents explicitly codify boundary coordination rules, turbulence factors such as dissimilar boundary orientations and boundary definition predicaments are unlikely. When privacy policy documents are not sufficiently clear or detailed in articulating boundary coordination rules, the factors of fuzzy boundaries, boundary rule mistakes, and privacy dilemmas can cause boundary turbulence in boundary coordination between the user and technological actors.

Even if privacy policy documents comprehensively articulate boundary coordination rules, perceptions of fuzzy boundaries, boundary rule mistakes, and privacy dilemmas can still occur. Such perceptions exist for several possible reasons: failure to read the documents in detail, low levels of literacy or inability to comprehend the documents, excessive legalese, or lack of trust in these documents. These perceptions are more likely to occur in human-technology privacy management relative to interpersonal privacy management because it is much more difficult to clarify such perceptions with technological actors compared to human actors. Factors that potentially influence individual perceptions of appropriate boundaries and rules that result in boundary turbulence are also important for CPM theory to consider.

Finally, besides examining the factors or perceptions that can cause boundary turbulence, I contend that it is also important to theorize the effects of boundary turbulence in CPM theory as a broad framework of human-technology privacy management. There is much existing work on how individuals feel a loss of power and control over online privacy, which are manifestations of the effects of boundary turbulence from the CPM theory perspective. Scholars have variously termed such effects *privacy fatigue* (Choi et al., 2018), *privacy apathy* (Hargittai & Marwick, 2016), *privacy cynicism* (Lutz et al., 2020), or *helplessness* (Cho, 2021). Some scholars have proposed the theoretical framework of "digital resignation" to describe people's feelings of a loss of control in how digital entities such as platforms use their personal information (Draper & Turow, 2019). In addition to theorizing the effects of boundary turbulence, it is also important to examine the

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different ways in which individuals cope when boundary turbulence occurs with technological actors. Scholars have proposed various models of coping that involve cognitive, emotional, and behavioral strategies (Beaudry & Pinsonneaul, 2005; Cho et al., 2020).

Theorizing the effects of boundary turbulence and how individuals cope with the turbulence is important for CPM, because the experience of and coping with these effects can potentially influence how users form boundary rules and coordinate privacy boundaries in future communication with technology. The role of prior privacy experiences and their influence on how individuals manage privacy is especially salient for CPM as a broad framework of human-technology privacy boundary management. This is because, given the prevalence of mobile technology and applications for many daily activities, individuals are likely to interact continually with technological actors and may bring their experiences from managing privacy boundaries with previous technological actors into their decisions on privacy boundaries with new technological actors. Individuals with positive prior experiences are likely to form different boundary rules and coordinate privacy boundaries in future interactions with technological actors compared to those with negative prior experiences.

CONCLUSION AND DISCUSSION

This article demonstrated CPM theory's utility as a broad framework of privacy boundary management in human-technology information disclosure. CPM originated as a theory of privacy boundary management between married couples and was then expanded to a broader theory of privacy boundary management in interpersonal communication contexts. As social media became increasingly popular, scholars used CPM theory to examine how individuals maintain privacy boundaries with other individuals; CPM theory in the social media context was mainly used to examine how privacy boundaries were managed using technology, not with technology. Although some scholars have applied CPM theory to examine privacy boundary management with technology, to the best of my knowledge, there has not been a detailed and systematic examination of the application of CPM theory to understand human-technology privacy management that considers differences in interpersonal and human-technology communication.

This article addresses this gap in the literature by providing a detailed account of how the main tenets of CPM theory can be applied to understand human-technology privacy boundary management as a broad theoretical framework. By using the main tenets of CPM theory instead of theorizing from the ground up, my article leverages the significant extant literature and theoretical perspectives on privacy in technological contexts, situating them under a single, coherent framework of privacy boundary management. This approach not only allows these perspectives to theoretically relate to one another, it also provides a more holistic understanding of privacy in technological contexts. Identification of theoretical and research gaps is also easier when the relationships among these perspectives are clearly outlined under CPM as a broad theoretical framework for human-technology privacy boundary management. Broadly, I summarize this article's contributions into three main areas.

First, in expanding CPM theory to human-technology privacy management, I have demonstrated that CPM theory works well as a broad framework for theorizing the management of privacy boundaries with technology. When CPM theory expanded from theorizing individuals to institutions (Raynes-Goldie, 2010), boundaries remained the main theoretical object of concern. Similarly, boundaries remain the main theoretical object of concern in this extended framework. I also present how much of the extant literature on privacy in technological contexts can also be understood as explaining different aspects of human-technology boundary management, namely boundary rule development, coordination, and turbulence. Much of the CPM theory explaining the intricacies of interpersonal privacy management is difficult to apply directly to human-technology privacy management. However, by conceptualizing CPM theory as a broad framework that incorporates existing theoretical perspectives to understand boundary management, CPM theory can extend its theorization of boundary management to account for how individuals manage privacy boundaries with technology by leveraging extant literature in relevant areas.

Second, I identified a number of important differences in the nature of interpersonal information disclosure and human-technology information disclosure to enhance CPM's theoretical applicability to boundary management with technology. In particular, I highlight

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the critical importance of technological literacy in boundary rule development because it is near-impossible to disclose personal information to technological actors without sufficient technical knowledge and skills. Moreover, in boundary-rule coordination with technological actors, social ties do not apply. Rather, boundary coordination is achieved through legal ties. I believe that considering these two key differences between the nature of interpersonal information disclosure and human-technology information disclosure not only provides a more comprehensive account of human-technology boundary management but also offers new possibilities for further theoretical developments in CPM theory as a broad framework of human-technology information disclosure.

Finally, because human-technology information disclosure is coordinated through legal ties, the role of third parties (such as NGOs and governments) also influences boundary coordination, though these parties may not form a boundary linkage through information disclosure. Scholars have argued that online personal data control (Lutz et al., 2020) and privacy protection (Hoffmann et al., 2016; Seubert & Helm, 2020) are difficult because legal ties disproportionately favor technological actors due to high litigation costs. Therefore, theorizing the role of third parties in human-technology boundary management is critical because individuals can only turn to these third parties to influence technological actors if they lack financial resources. As a side note, I suggest the roles of third parties, such as counselors and arbitrators, can also be considered in privacy boundary coordination in certain interpersonal settings.

The theorization of CPM in human-technology privacy management is not without limitations. First, I have focused on how the individual manages privacy boundaries with technology, but the field of privacy in technological contexts is much broader and includes legal, political, and computer science dimensions that my extension of CPM as a broad theoretical framework cannot account for. However, scholars such as Bräunlich et al. (2020) have proposed macro-level privacy models, and I see my work as complementary to them. Second, I deliberately adopted a broad view of technology in this article and did not provide a specific definition of technology. My intention is to develop a flexible framework that can accommodate understanding of information disclosure and boundary management

for existing technologies (e.g., social media, online shopping platforms, artificial intelligence, Internet of Things) and future technologies. This model conceives technology as a property of technological actors, which allows the model to examine human-technology privacy management for a wide range of technologies.

I also note that this work extending CPM theory to account for human-technology privacy boundary management is mainly based on the work of Petronio (2002). To streamline the theory and increase its accessibility, the core ideas of CPM theory in Petronio's (2002) work were later distilled into five principles (Petronio, 2010) and three elements with eight associated axioms (Petronio, 2013). I have not addressed these later developments because I adopted a more expansive approach using the main tenets in the original CPM theory to account for human-technology privacy boundary management. In doing so, I noted some significant differences between the original CPM theory and the extension of CPM theory as a broad framework of human-technology privacy management. Although I have refrained from engaging with these later developments in part because of the word constraints of this article, I strongly believe and encourage future work on CPM theory to follow the developmental trajectory of the original CPM theory in providing a streamlined account of this framework for human-technology privacy management to increase its accessibility.

In closing, I note that there is increasing empirical research interest in CPM and privacy in technological contexts (Kang & Oh, 2021; Pal et al., 2020; Widjaja et al., 2019; Zimmer et al., 2020). I am hopeful that this study on how CPM theory can be extended to understand and examine human-technology privacy boundary management as a broad theoretical framework will be useful to researchers seeking to understand privacy boundary management at the individual level. Although the extent to which I can flesh out details of CPM theory as a broad theoretical framework to theorize boundary management in human-technology privacy management is constrained by the word limit, I nonetheless believe that I have provided a clear and succinct account of its potential for other researchers to build on this work, either theoretically or empirically, to further understanding of how individuals manage privacy boundaries with technology. I also believe that this article has adequately demonstrated that CPM theory is the most

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comprehensive account of how individuals manage privacy boundaries, be it in interpersonal or human-technology contexts.

Implications For Practitioners

This article is suitable for technical communication and is of particular interest to practitioners working with new technologies. This article can assist with everyday challenges related to issues of privacy in the current work of these professionals in three main ways. First, the six rules of development in human-technology boundary management—namely, cultural expectations, socio-demographic variables, motivations, situational context, risk-benefit analysis, and technological literacy—should help guide practitioners. Specifically, (1) practitioners need to consider users' cross-cultural differences in privacy boundary management rule development and (2) practitioners also need to take demographic differences into account when designing technical products and applications. In addition to gender in interpersonal communication, other relevant socio-demographic factors such as age, education, and income will also influence the development of privacy boundary rules in technological contexts. Also, (3) practitioners should consider Maslow's hierarchy of needs, (4) the complexity of technology makes the context in which information permeability exists extremely complex, and, therefore, practitioners need to comprehensively consider multiple contexts and scenarios and (5) practitioners need to influence the design of technology to reduce user perception of privacy violations. Finally, (6) improving technical literacy is closely related to the practice of technical communication. Practitioners can communicate more valuable technical knowledge to the public and industry.

Second, based on the discussion of privacy boundary coordination in this article, cross-platform privacy flows are especially worthy of the attention of technical communication practitioners. In interpersonal communication, the spread of personal information is generally limited to a small group of people. However, technology has made the cross-platform flow of privacy extremely complex, encompassing many people and technological actors. The boundaries of cross-platform privacy flows in the context of new technologies are not so clear-cut and predictable. Therefore, practitioners need to appreciate the complexities of privacy boundary management in technological contexts to better

balance business and organizational interests with user expectations of private information disclosure across technological platforms.

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Review of Three Books on [Resistance to] Accessibility

By Gregory Zobel

Administrators, bureaucrats, and service providers determine whether people with disabilities are given equal access to meaning, spaces, places, transit, and jobs. Compared to this power, accessibility policies matter little. People with disabilities are valued less than people without disabilities. This negative portrait is painted and substantiated in two of the three books on accessibility and technology that I reviewed. Their point is clear: there is much work left to do. Fortunately, accessibility practices are not Dorian Gray; all is not lost. Despite the serious problems covered, all three books offer multiple solutions for overcoming individual and institutional resistance to providing meaningful accessibility.

More than a Glitch: Confronting Race, Gender, and Ability Bias in Tech

Meredith Broussard presents a well-articulated argument that technology is not just occasionally flawed but fundamentally biased. She argues this bias reflects society's inherent bias; those who create technology often embed their own biases, whether consciously or not, in that technology. Broussard moves beyond observation and dives deep into the technology's systemic issues. She critiques multiple fields, including AI, policing, medicine, and education. For educators, each chapter is a stand-alone exploration, making the book a valuable reading resource across different disciplines.

Technochauvinism is Broussard's central concept and frame. This idea critiques notions of technology's inherent superiority and neutrality; it challenges the assumption that technology, being "data-driven" and crafted by scientists, is free of human bias. Broussard forcefully argues against this throughout the book. She highlights that technology developers–usually homogeneous groups of computer scientists and engineers—carry their own, often unquestioned and unacknowledged, biases and limitations.

On accessibility, Broussard highlights that new technologies are seldom designed with all users in mind. She shows that making technology accessible is often an afterthought, not a priority. This approach reveals a lack of commitment to solving real problems faced by users, particularly those with disabilities. Rather engineers and scientists focus only on addressing issues they perceive as problems. Thus, the designers ignore the needs of a broader user base. Exacerbating the problem, Broussard states, is most engineers' and computer scientists' limited to nearly non-existent ethical training.

Broussard's work is valuable for accessibility professionals because it helps frame how accessibility challenges and problems are not stand-alone. Rather, accessible technology problems are just one of many symptoms created by technochauvinism and its low-to-no ethical standards.

Broussard proposes several solutions to these systemic issues. These include designing with the aim of solving real problems faced by people, especially those often marginalized. She advocates for a focus on designing for justice, meaning inclusivity should be integral from the beginning rather than an add-on. Understanding and acknowledging technology's inherent problems is another critical step. This involves working closely with diverse communities to understand and address their specific needs.

Accessibility Denied. Understanding Inaccessibility and Everyday Resistance to Inclusion for Persons with Disabilities

Hanna Egard, Kristofer Hansson, and David Wästerfors' edited anthology takes a critical look at the Nordic countries' treatment of accessibility. These countries are often idealized for their strong economies and social welfare systems. The collection dispels this myth by highlighting persistent accessibility and inclusion issues for people with disabilities, despite these countries' adherence to the Convention on Rights for People with Disabilities (CRPD) and their national legislation. (The US has still not signed the CRPD as of November 2023).

The book's detailed explorations of daily life challenges for people with disabilities is its strength. It offers specific examples, such as the analysis of customer complaints regarding transportation accessibility and the efforts of

Review of Three Books on [Resistance to] Accessibility

"citizen detectives" to address local accessibility issues. Faces, lives, and places impacted by denied accessibility become real. These granular views of lived individual and collective experiences of people with disabilities move the discussion from abstract to concrete realities.

These views help concretize the tangible gap between policy and practice. The chapters show various types of damage done despite progressive policies and inclusive public statements. For example, in examining living arrangements and group homes for adults with more significant disabilities, the authors show how lives are often shaped and directed not by their own volition, but by the logistical needs and personal preferences of caregivers and service providers. This mirrors Broussard's point that technology solutions are often developed based on the creators' perspectives and needs rather than those of the users.

The book shows that, while policies may exist, implementation is frequently lacking: accessibility is treated as an add-on rather than a right. The research also underscores when there is implementation, the accessibility efforts' are often tokenistic. This mirrors Broussard's observations on technology, where accessibility features are often retrofitted rather than integrated from the start.

Many solutions are included, be that proactive resistance, self-advocacy, or citizen activism at the local and micro level. The book demonstrates the editors' commitment to accessibility because it's available for free as an Open Access text. Holistically, the book includes multiple theoretical perspectives and robust academic language—thus it is most suitable for academic researchers and graduate students. That said, people working within large organizations—especially government—would benefit from reading at least one or two chapters. This could, perhaps, increase understanding that while having an accessibility policy is better than no policy, that policy needs to not just be acted on—it needs to have people who own responsibility and accountability for enforcing it.

Guide to Digital Accessibility: Policies, Practices, and Professional Development

Rae Mancilla and Barbara A. Frey's collection is a significant exploration of digital accessibility in higher education. The book is divided into four sections, covering accessibility's background, policy, course development, and professional development. The use of quick-response (QR) codes to provide additional resources and the book's accessible style set this collection apart for its ability to be both practical and useful.

Most of the 23 chapters offer solid advice for improving digital accessibility, such as detailed methods for enhancing closed captioning in university courses. Multiple chapters describe various tools for making digital content more accessible. This offers multiple starting points for people who want to enhance their tool sets or get started increasing accessibility now. The professional development (PD) section is particularly relevant. While several chapters address the need to increase accessibility's social validity among faculty and staff, a key component in creating a more inclusive campus environment, they also offer numerous approaches and ways to offer PD for staff, faculty, and administrators for institutions of varying sizes and climates.

This book could be used by individual contractors, instructional designers, faculty, and trainers for an array of situations. Whether it's to offer concise explanations to professionals new to accessibility, developing relevant focused training, or skilling up as an individual—that content is here. Additionally, at least 15 chapters could easily stand on their own and be used in advanced undergraduate or graduate courses.

Despite the book's toolkit approach to the core facets of digital accessibility, it ignores accessibility's most important issue: funding. There was not a single significant reference, discussion, or suggestion on how to persuasively argue for, or obtain, funding for increased accessibility work. Those working in related fields of inclusion, disability services, and accessibility know how readily many organizations speak about these issues and develop policies but provide little or no funding. This leaves most of the material and emotional labor to be done by a few: usually people the policies are meant to support and include. This must be addressed. It's disheartening to see so many suggestions or offerings, yet no indication of how to fund or make them happen.

The editors and authors of this book are not alone. There was also little to no discussion of effective advocacy methods and strategies for increased funding in any of the books reviewed. It's not clear if that's a sign of few people having success obtaining funding for accessibility or if those who have succeeded just have not had the time or ability to share their insights, resources, and approaches.

Gregory Zobel

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Table 1: Accessibility books compared

	More than a Glitch	Guide to Digital Accessibility	Accessibility Denied
Audience	General Reader	Faculty, Instructional Designers, Course Creators, Accessibility Trainers, and Advocates	Accessibility Trainers and Advocates, Scholars, Researchers
Major Strengths	• Easy reading; clear argumentation. • Plentiful, detailed examples. • Multiple social and cultural contexts and impacts explored. • Multiple proactive solutions presented. • Engaging voice; persuasive presentation. • Great as an entire read or for excerpting chapters.	• Short, readable, practical chapters • QR codes for multiple external resources and tools • Multiple tools and solutions presented for course redesign. • Multiple methods and paths for professional development training and instruction presented. • Great for excerpting chapters or having as a reference text.	• Robust, detailed real-world observations, interviews, and documentation about negative impacts of denied accessibility. • Diverse, interesting research methods and analysis. • Broad variety of case studies and people impacted. • Multiple, interesting solutions presented. • Great for excerpting chapters.
Major Weaknesses	• Given multiple social impacts covered in each chapter, it is easy to feel overwhelmed. • With multiple social contexts given, there was some good depth–but there could have been more. Each chapter could have easily been a book.	• Too much emphasis on QA framing and priority for people not working with QA. • Some examples were very basic or simple–while good for introducing content, medium and advanced accessibility users won't find value in about a quarter to one third of the book. • No discussion of advocating for funding of ideas, programs, or solutions presented.	• Few useful, practical tips that can be implemented easily. • Academic and scholarly language may make content inaccessible for some possible users/readers. • All examples were set in Nordic Europe so readers in other countries may find research less relevant.
Comments	Engaging, interesting, well-documented and persuasive read about challenges with technology and possible solutions. Contributes valuable insights to ongoing conversations about technology and specifically AI.	Solid value for practitioners working with accessibility in their own content or who are training or advocating for accessibility in their institutions.	Excellent scholarly text that reveals gaps and impacts in accessibility implementation. Solid modeling for future research and identifying human impacts of poorly applied policy.
Rating (5-star scale)	*****	****	****
Cost (USD)	$26	$39.95	$52.95 or Free [open access]

Jackie Damrau, Editor

Books Reviewed in This Issue

The reviews provided here are those that are self-selected by the reviewers from a provided list of available titles over a specific date range. Want to become a book reviewer? Contact Dr. Jackie Damrau at jdamrau3@gmail.com for more information.

Social Justice and the Language Classroom: Reflection, Action, and Transformation

Deniz Ortaçtepe Hart. 2023. Edinburgh University Press. [ISBN 978-1-4744-9176-1. 242 pages, including index. US$29.95 (softcover)].

Social Justice and the Language Classroom: Reflection, Action, and Transformation describes the built-in systems of oppression and inequality in our current educational materials and pedagogies. Its aim to "develop language educators' critical consciousness and critical reflection to recognize [these] systems of oppression and inequality" (p. xv) is met through well-researched, informative, and compelling discussions about the need for and importance of adopting social justice education in the language classroom. The other goal of actively adopting "social justice pedagogies for transformation and social change" (p. xvi) is something that will take more than a book to bring about, but reading *this* book is an excellent first step in that process.

Deniz Ortaçtepe Hart provides a scaffolded approach to understanding social justice and its place in the language classroom. The book is divided into three parts and includes helpful appendixes with stories, lesson plan template, and sample lessons. Part I, Language Teaching for Social Justice, introduces terms, such as ideology, hegemony, oppression, social justice, and social justice education, and then moves into more complicated concepts, such as critical pedagogy, criticisms of critical pedagogy, deconstructing language classroom materials, and understanding the need for social justice pedagogy in the language classroom.

Part II, Critical Themes and Frameworks, is divided into three chapters on class, race and ethnicity, and gender. Each chapter defines relevant terms, which are more complex than they may seem (race, ethnicity, racialization, ethnicization, and racism) then presents material on theories; historical and contemporary practices; frameworks for social justice education in language classrooms; and criticisms. By addressing criticisms, readers are informed of counterarguments against pedagogies that examine dominant narratives of class, race, and gender, thus providing them with rationale for implementing critical pedagogies.

Part III, Conclusion, addresses problems of implementing social justice. Ortaçtepe Hart acknowledges the contentious atmosphere surrounding social justice education and provides strategies for informing "stakeholders" (mostly parents) about the need for and benefits of this approach to teaching; however, I am uncertain that these strategies are realistic. She is assuming a rational, unemotional, and politically neutral audience. Additionally, there is not much information about how to implement the strategies in this book in an environment where critical instruction of any kind is often met with termination and/or legal consequences for teachers. For example, in chapter 7, Discussion about problematizing representation, shows the importance of validating "all gender and sexual identities in language classrooms" (p. 134), but the most important question is: Can this be done? In many states, it cannot. In other words, implementation of social justice education will take more than the awareness and strategies this book has to offer. I mention this point only because action and transformation are part of the book's title, which may set readers up for a promise that goes beyond what readers can do after reading it.

Overall, *Social Justice and the Language Classroom* is an excellent resource for informing readers about the need for and advantages of implementing social justice pedagogies in language classrooms. Each chapter is well written and researched, provides global examples, includes meaningful reflective tasks, chapter notes, multimedia resources, and a list of children's books. Thus, this book would make an excellent textbook or supplemental text for undergraduate or graduate classes that include language education of any kind.

Diane Martinez

Diane Martinez is an associate professor of professional and technical communication at Western Carolina University. She previously worked as a technical writer in engineering, an online writing instructor, and an online writing center specialist. She has been with STC since 2005.

The Dictionary People: The Unsung Heroes Who Created the Oxford English Dictionary

Sarah Ogilvie. 2023. Alfred A. Knopf. [ISBN 978-0-593-53640-7. 374 pages, including index. US$30.00 (hardcover).]
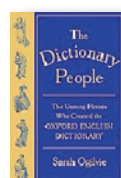
Lexicographer Sarah Ogilvie knows well the Oxford University archive of the multi-volume *Oxford English Dictionary* (*OED*), that treasure house of the English language. As a former *OED* editor and

researcher, she has enjoyed access to thousands of records, particularly the slips of paper submitted by contributors to the corpus of samples of usage during the 30-year tenure of editor James Murray.

In finding this treasure trove, she realized that "I was the first person to . . . track down who the contributors really were, and to build as comprehensive a picture as possible. I had found the Dictionary People" (p. 8). Her descriptions have been lovingly created from long-forgotten notes, letters, those slips of paper, and other documents.

Chapter titles cleverly reveal contributors' personalities and agendas: "C for Cannibal," "H for Hopeless Contributors," "L for Lunatics," "V for Vicars (and Vegetarians)," etc. Who could be lunatics? Why, William Douglas and John Dormer, who between them wrote out nearly 200,000 reading slips and went mad from overwork. Obligingly, Ogilvie meticulously describes the medical details of Dormer's descent into madness.

We learn that the mysterious Chris Collier "cut out the quotations and, dipping a brush in sweet-smelling Perkins Paste glue, he stuck the quotation upon the slip.…some nights he could get through 100 slips. Just him and the sound of cicadas, and the greasy smell of the neighbour's lamb chops" (p. 336). And he often wrapped his contributions in cornflake packets. Many idiosyncratic details we'd never find elsewhere. For example, 238,080 slips were submitted by the 196 American contributors, 10 percent of all contributors.

Ogilvie also devotes loving detail to Murray: as a bicyclist, he was "frequently seen pedalling madly up and down the Banbury Road . . . his white hair, white beard, and black gown flowing in the wind as he delivered copy to the University Press" (p. 116).

Dozens of photos bring to life the contributors, their slips, and Murray. To study these illustrations most efficiently, be sure to access the list of illustrations at the back of the book. You might also want to consult the comprehensive name index.

After a while the succession of one contributor after another can get a bit tiring, so take an occasional break. Also, don't hurry, for this is a volume to read for pleasure as well as facts.

To get a reasonably full picture of the *OED*, you can read lexicographer Peter Gilliver's *The Making of the Oxford English Dictionary* (Oxford University Press, 2016) for its broader historical vision and then Ogilvie's

book for its flesh-and-blood account of the early individuals who launched the dictionary.

Avon J. Murphy

Avon J. Murphy is an STC Fellow who serves the Society as a researcher. A onetime college professor and government writer, he is a technical editing contractor and the principal in Murphy Editing and Writing Services, based in western Washington.

Digital Design: a History

The history of digital design has largely been ignored by previous design histories, either because they were written before the digital design era fully emerged or because it was too soon to piece together the parts. But now, thanks to Stephen J. Eskilson, there is finally a comprehensive book on the subject. This book is what digital designers, researchers, students, and educators have been waiting for. *Digital Design: a History* is a brilliant reflection on this history and provides an interesting take on presenting a history of design more broadly. There is much that can be learned not only from its content but also from the approach to the telling of its history.

Digital Design is not strictly chronological. It takes a thematic approach, though themes are presented chronologically as chapters, where the content moves back and forth in time to show connections to past ideas and influences. Delightfully surprising, this presentation includes an emphasis on analog design history and its influence on digital design, some of the connections will likely surprise readers.

One of the strongest aspects of this history is the limited examples of specifically named designs by overly heroized designers. Instead, Eskilson chooses very specific examples of design to represent the themes; these examples also reflect a more equitable presentation of design history, often contributions by women and people of color. This is a refreshing change from the white male Eurocentric narratives that dominate the field. Eskilson also uses the text to point to ongoing issues of gender and race inequities in the design field but leaves us with a sense of hope for a more equitable future. The book also critically examines the role and

responsibilities of designers, such as the infamous Theranos project designed by Fuseproject.

One limitation of the book is that it contains relatively few images. Though this is very intentionally done, the text is well supported by images. However, some history books that include a wealth of images are not nearly so engaging. Another wish would be the inclusion of a bibliography; there were a few topics that I would have loved to have investigated further. I usually turn to the bibliography for that, but since none was included, I will need to investigate these topics independently. Arguably, most readers will not notice this omission.

Digital Design is a rich, full picture of the digital age thus far. The content will appeal to a wide audience, including design students, practitioners, educators, and possibly anyone else interested in digital design, though the level of writing is perhaps not for all these audiences; undergraduate students might struggle with the language. The first chapter, which presents the philosophies and ideologies that influenced digital design, was particularly dense and might put off some readers. Still, readers are encouraged to continue as the content soon becomes more manageable, and this history is not presented without a sense of humor, as the author comments, "Skynet becomes self-aware" (p. 161).

Amanda Horton

Amanda Horton holds an MFA in Design and teaches graduate and undergraduate courses at the University of Central Oklahoma (UCO) in design history, theory, and criticism. She is also the director of the Design History Minor at UCO.

The Claremont Run: Subverting Gender in the X-Men

J. Andrew Deman. 2023. The University of Texas Press. [ISBN 978-1-4773-2545-2. 184 pages. US$45.00 (hardcover).]

Chris Claremont's tenure as the writer for Marvel's *X-Men* comic series is widely regarded as one of the greatest comic runs of all time. For sixteen years, from 1975 to 1991, Claremont penned dozens of stories that would radically transform not only the *X-Men* series but the comic landscape. Yet Chris Claremont's most significant contribution to Marvel lies in his characterization of the team that he developed over time. When Claremont inherited the title, the X-Men's personalities were mostly stock comic archetypes that had been seen countless times before. But Claremont imbued each character with a depth and complexity that had never been seen in mainstream comics. In *The Claremont Run: Subverting Gender in the X-Men*, J. Andrew Deman studies each core character in *X-Men* to show how Claremont's progressive approach to gender influenced the characterization of the team and contributed to the series' runaway success.

In the book, Deman methodically analyzes each of the core *X-Men* team under Claremont's stewardship. The author investigated Phoenix, Storm, Kitty Pryde, Rogue, Psylocke, Dazzler, Cyclops, Wolverine, Nightcrawler, and Havok to see how they deviate from the traditional expectations of gender in comic books throughout the era. This book emphasizes how almost every major character subverts the traditional gender narratives for comic book superheroes. His women are capable, confident, and critically important to the stories of *X-Men*, something of a rarity for comics of the time. Female characters, like Phoenix and Storm, are arguably the strongest team members. Conversely, Claremont took previously macho, masculine archetypal characters, like Cyclops and Wolverine, and gave them insecurities, doubts, and feelings traditionally reserved for female comic heroes. Cyclops is regularly emasculated by his more powerful girlfriend, Phoenix; similarly, the supposedly hypermasculine, violent Wolverine is regularly placed into a nurturing, maternal role for younger heroes.

Deman highlights these deviations across the sixteen years of Claremont's run on *X-Men*. As a longtime comic reader, I found Deman's observations well-reasoned and insightful. The author cites interviews from Claremont and other historians to support his claims, further strengthening his argument that Claremont intentionally subverted gender norms within *X-Men*. I greatly enjoyed *The Claremont Run*. It's an excellent resource for those looking into gender studies within the comics industry or for those comic fans looking for scholarly analysis. The only reservation I have is that Deman does assume a relatively high level of familiarity with the *X-Men* franchise. He does his best to explain the key characters and storylines, but I think that readers would still benefit from having a pre-existing understanding of the *X-Men*. The book reveals the multiple levels of narrative and

communication present within Claremont's comics and proposes a novel reading of *X-Men* that contains surprising depth and sensitivity regarding gender.

Nathan Guzman

Nathan Guzman is a technical writer based in Overland Park, Kansas. Nathan is an avid reader with interests in reading anything that expands his knowledge of the world and how it works.

How to Deal with Angry People: 10 Strategies for Facing Anger at Home, at Work, and in the Street

Dr. Ryan Martin. 2023. Watkins Publishing. [ISBN 978-1-78678-664-7. 224 pages. US$16.95 (softcover).]

Dr. Ryan Martin, the self-dubbed "Anger Professor", wrote *How to Deal with Angry People: 10 Strategies for Facing Anger at Home, at Work, and in the Street* to assist those "navigating the challenges of having an angry person or angry people in their life" (p. 4). This book contains not only the science behind angry people and vexing situations, but also clear ways to understand angry situations, analyze emotions, and resolve conflict.

How to Deal with Angry People is aptly organized into two sections: Part One: Understanding Angry People and Part Two: Ten Strategies for Dealing with Angry People. In Part One, Martin delves into the science behind why a person might be angry, including topics such as their upbringings, worldviews, and biologies. He also poses the idea that there is a stark difference between angry people, who demonstrate "a relatively consistent pattern of angry feelings, thoughts, and behaviors" and those who experience brief, fleeting anger as an "emotion–a feeling state" (p. 17). This portion also contains real life examples of both types of anger in individuals coupled with psychology facts and data, which effectively sets up the actionable Part Two.

Part Two of *How to Deal with Angry People* is set up as ten chapters, organized as chronological steps the reader can take towards effective management of angry people and situations. Martin suggests that there are a variety of actions we can take towards successful movement forward in high-conflict situations, including remaining calm, having a premeditated response, and working towards a solution. While

these can be successful steps, Martin also continually reinforces that there are times where setting personal boundaries and knowing when to disengage in angry situations may be best moving forward.

While *How to Deal with Angry People* is a practical guide for those looking to understand anger from more than just a "self-help" perspective, it is also highly engaging for a general audience. Martin uses footnotes with humorous quips throughout, making scientific information and case studies entertaining to read and easier to understand. Further, the actionable steps given are easy to follow and directly apply in various situations. Martin clearly outlines many methodologies with steps the reader can employ before an angry situation arises, including diagramming a tense interaction from multiple perspectives, practicing deep breathing techniques to stay calm, and recognizing patterns in behavior to limit the destructive nature of anger.

How to Deal with Angry People is a great read for those who are experiencing an angry situation or would like to further understand the psychology of anger. As technical writers, we engage with a variety of people in the workplace. Even if you do not interact with anger daily, having the tools to successfully navigate angry interactions is well-worth taking the time to read the concepts in this guide.

Lauren Rigby

Lauren Rigby is an STC student member at the University of Alabama in Huntsville. She is a first-year graduate student who is pursuing a master's in English with a certificate in technical communication. Lauren is currently working towards becoming a technical communicator in the greater Huntsville area.

Building A Culture of Inclusivity: Effective Internal Communication for Diversity, Equity and Inclusion

Priya Bates and Advita Patel. 2023. Kogan Page. [ISBN 978-1-3986-1039-2. 302 pages, including index. US$41.99 (softcover).]

Building A Culture of Inclusivity: Effective internal communication for diversity, equity and inclusion is an excellent resource for professionals who want to learn about diversity, equity, and inclusion (DEI) and how internal communication can foster inclusivity. Priya Bates and Advita Patel collectively

have 30 years of experience in the communication industry. They lean on that experience and extensive research to explain that "the role of internal communication is to fill the gaps, create clarity, reinforce action and encourage conversations that build trust over time" (p. 293).

The first five chapters of Bates and Patel's book provide an overview of DEI foundations. The authors recount the history of DEI and detail how this can contribute to organizational success. They describe why trust is the foundation for an inclusive work culture and how leadership at all levels of an organization is essential for successful and lasting change. Bates and Patel explain what bias is, how conscious and unconscious bias impact our decisions, and how curiosity can help us manage our own biases. The last chapter in this section reviews what internal communication is and its value in the workplace.

In the book's second section, the authors discuss frameworks, models, and best practices for how to implement and sustain DEI practices. They present their own framework, ALLMe 4A, in detail. The 4As in their model are acknowledgement, awareness, action, and accountability. Bates and Patel also review several other change and diversity continuums and encourage the reader to find the framework or model that makes the most sense for their case. The authors walk through how to build an engagement plan for DEI with practical guidelines about setting goals, training employees, measuring results, and sharing success.

Even though the focus of *Building A Culture of Inclusivity* is internal communications, the book provides helpful information for technical communication professionals who write for external audiences. Bates and Patel discuss the importance of strong listening skills for communicators, online accessibility, inclusive language, and avoiding jargon.

The authors effectively use case studies and current events throughout the book to support their ideas. They conclude each chapter with key takeaways and reflective questions to encourage the reader to think about how to put the chapter's concepts into practice. Their excellent use of headings, tables, and diagrams make the concepts easy to understand and will be helpful when using this book as a reference in the future.

Joanne DeVoir

Joanne DeVoir is an STC member and the manager of Information Development at Minitab, LLC. She has more than 20 years' experience in writing technical documentation for software applications. Throughout her career, Joanne has directed content redesign efforts while fostering a collaborative work environment.

The Visual Elements—Photography: A Handbook for Communicating Science and Engineering

Felice C. Frankel. 2023. The University of Chicago Press. [ISBN 978-0-226-82702-5. 240 pages. US$20.00 (softcover).]
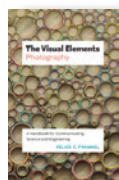
The Visual Elements—Photography: A Handbook for Communicating Science and Engineering is a new book series intended for science and engineering professionals to help communicate their work effectively to a broad range of audiences. *Photography* is the first book in the series by author Felice C. Frankel and is designed to serve as a handbook on how to use photography to portray scientific research effectively. Frankel is an award-winning scientific photographer at MIT and has had a distinguished career, including having several of her photographs chosen to serve as the cover image for the most noted journals in the field of science. *The Visual Elements—Photography* is an outstanding resource, with a broad approach to capturing images, ideal for anyone interested in improving their communication through photographic images.

The handbook contains six chapters; the first four focus on various tools for capturing images, including scanners, phones, cameras, and microscopes. It might seem odd to include some of these options due to preconceived notions that scanners and phones are not ideal tools for capturing photographic images. Still, the examples with the scanner have some surprisingly good results, and cameras on smartphones are improving all the time. It has been said that "the best camera is the one you have." Often, we have our phones handy but no professional camera. Additionally, the chapter on using a camera doesn't provide specific information about camera settings as some might think. Frankel states that the camera's handbook is the best tool for that. Instead, the chapter focuses on when to use a camera over the other tools and some of its strengths.

The final two chapters, "Putting it Together" and "Image Integrity," focus on composing and adjusting images, as well as the ethical considerations of using photos to depict scientific images.

The content is very approachable, with outstanding photographic examples, the majority of which were captured by Frankel, further indicating her skills and expertise in this area. The images are very purposeful and serve to illustrate the author's points, often including several steps in the process to show how the best results were achieved. She also provides many examples of the different approaches attempted and often asks the reader to determine for themselves which image portrays the content the best.

It is a quick read and can easily be read in one sitting but is a helpful guide to keep handy for when a specific need for photographs arises. Frankel also proposes a few exercises that would be good to complete for anyone who wishes to improve their photography skills. One of the most refreshing sentiments expressed in the book is the need to experiment with the options at hand, emphasizing that there is no one-size-fits-all approach to photography. *The Visual Elements—Photography* is written for people in the science and engineering world to think about how they photograph their work for clear communication of their processes, ideas, data, and so forth, but the book is informative for anyone to learn some handy techniques and tricks for improving their photography.

Amanda Horton

Amanda Horton holds an MFA in Design and teaches graduate and undergraduate courses at the University of Central Oklahoma (UCO) in design history, theory, and criticism. She is also the director of the Design History Minor at UCO.

Design Thinking: Understanding How Designers Think and Work

Nigel Cross. 2023. 2nd ed. Bloomsbury Visual Arts. [ISBN 978-1-3503-0506-9. 202 pages, including index. US$24.95 (softcover).]

Nigel Cross examines several design aspects: design ability, design motivation, and how designers think and work. He defines design thinking as the "practical, strategical and cognitive skills actually used by designers in creating proposals for new

products and systems" (p. 2). Understanding these thought processes will help any writer involved in technical design, innovation, or communication. While the author primarily summarizes and analyzes case studies, he brings it all together in his final chapters on designer work and expertise.

Cross uses two different methodologies for his case studies: the first type, based on interviews, highlights two different designers and how they work; the second type utilizes two timed and recorded case studies, one of a single designer and one of a design team. In the timed studies, designers were given prompts to generate a workable solution within two hours. Based on these case studies, Cross writes that designers succeed because of their expertise in their field, their strong motivation, their critical attention to existing models to clarify and improve the status quo, and their detailed design process.

The author notes that design is a highly complex process as designers switch regularly "between solution concepts and problem exploration — between developing ideas for building form and investigating the implications of those ideas in terms of the design brief and technical feasibility" (p. 20). The designers who are most successful seem to rapidly alternate between examining, sketching, reflecting, and back again toward solution development. The innovative designer clearly utilizes parallel working "keeping design activity going at many levels simultaneously" (p. 83). Sketching an idea, then adapting it, then further shifting the design seems to be a powerful way to shift a rough concept into a specific, purposeful design.

Through case studies and research, Cross builds an evidence-based understanding of how designers think and work. In his final chapter, he examines the evidence for how a designer grows from a novice to a master. He focuses especially on the studies done on designers working with ill-defined problems "where there is no definitive, complete formulation of the problem and no single or verifiably correct solution" (p. 155). An experienced designer has a "high level of intelligence used to plan, review, reflect on, adapt and…create novel solutions" (p. 168). A designer must define the problem, determine the relevant information, and discard the rest. While novice designers spend much time determining the problem, experienced designers quickly move to a solution-focused approach, using chunks of data already encountered to innovate and design workable solutions.

Design Thinking: Understanding How Designers Think and Work effectively captures how designers think, what they value, and how they work. The case studies, while occasionally a little dated (this is the second edition), do clarify for technical writers the impetus, discipline, and activities of how designers think, design, and create novel solutions.

Hannah Martin

Hannah Martin is a teacher and technical writer. She holds a master's in English from the University of Alabama in Huntsville.

The AI Dilemma: 7 Principles for Responsible Technology

Juliette Powell and Art Kleiner. 2023. Barrett-Koehler Publishers, Inc. [ISBN 978-1-5230-0419-5. 154 pages. US$22.95 (softcover).]

In *The AI Dilemma: 7 Principles of Responsible Technology*, Juliette Powell and Art Kleiner offer an engaging look at how leaders can respond to ethical dilemmas that arise as artificial intelligence (AI) technologies proliferate.

With the European Union agreeing in December 2023 on the AI Act, the world's first attempt to regulate the use of artificial intelligence, and the rest of the world set to follow, this book is an essential read for decision makers.

The authors begin by explaining how society can responsibly manage the effects of AI by considering four "logics of power:" engineering, corporate, social justice, and government. They devote each of the following chapters to a "principle of responsible technology:"

- Proactively managing risk to humans;
- Allowing access to the internal workings of AI systems and encouraging the development of "explainable" systems;
- Giving people control over how their data is used;
- Managing bias in the outcomes of AI systems;
- Holding stakeholders, including sellers and users of AI technologies, accountable;
- discouraging "tightly coupled" systems in which interdependence among parts allows a small malfunction to derail an entire system; and

- Embracing "creative friction" to minimize the damage that an unchallenged, "frictionless," system can cause.

The book's clear organization is just one of its strengths.

Powell and Kleiner embrace the inevitability of AI growth. In the introduction, they state, "This is not a technical book. It does not explain the way in which machine learning can be used or designed. It is also not a technology-bashing book, or a book about industrial policy or geopolitical supremacy through AI. We focus on how decision-makers can think more clearly and act more effectively." (p. 7).

They make extensive use of examples, both negative ones that show what can go wrong when AI systems are not developed responsibly, as well as positive ones that show how wise decision-making can allow AI to serve us to its full potential without harming vulnerable populations. In Chapter 3, Powell and Kleiner tell the story of two Boeing 737 Max plane crashes in 2018 and 2019, to show the devastation that can occur when information about the use of automated systems is inadequately shared with people who could avert a crisis if they were fully informed. In Chapter 8, "Embrace Creative Friction," the authors give examples of companies such as Disney and Cirque du Soleil, that deliberately hire diverse teams whose members challenge each other as part of the creative process, even if it slows productivity. They encourage the use of such diverse teams to evaluate and create new AI technologies that benefit the most people and cause the least amount of damage in their pursuit of "frictionlessness."

The AI Dilemma is a must-read read. Perhaps its only "weakness" is how quickly it will require a follow-up edition that discusses the latest successes and failures of attempts to regulate AI technology.

Valentina DiPeri

Valentina DiPeri is an STC member, a former journalist, and an aspiring technical writer with a recent technical writing certificate. She belongs to several STC SIGs, including the Technical Editing SIG and the Policies and Procedures SIG. Valentina is a website assistant for the Policies and Procedures SIG.

Sharing Our Science: How to Write and Speak STEM

Brandon R. Brown. The MIT Press. [ISBN 978-0-262-54695-9. 300 pages, including index. US$26.95 (softcover).]

"Scientific disciplines have evolved their own technical language" to explain what was previously unnamed. In addition, "specialized terminology becomes a signal for in-group belonging and group identity" (p. x). In other words, we speak the same language. Unfortunately, this is not quite true. What scholars really mean is: They write the same language. If they used the same words in speaking that they do in their scholarly writing, people would stay as far away from them as possible.

Brandon R. Brown stresses his point with a quote from Einstein: "If you can't explain it simply, you don't understand it well enough" (p. xii). By making it easier to understand, and more interesting, your message will also reach a much wider audience.

The problem is that in the sciences, especially in the natural sciences, the topic is usually much more interesting to the scientist than it is to the reader or the listener. One way around this is to find some real-life examples for the story that includes techniques that make the reader want to read on; by using what those in the trade (novelists, journalists, writers of trade books) call "dramatic tension" (p. 17).

My own take on this is: Try to keep the old fiction formula in mind, in just about everything you write: people, plot, and place (the 3 Ps). In more scientific material, think of the plot as a thesis or hypothesis. And now-and-then, try to rethink how and where you can apply some of the writing concepts that everyone has heard someplace or another.

Take the concept of interest. Have you ever thought of applying it to a Table of Contents? Has the thought ever occurred to you, to design an Irresistible Table of Contents? I haven't seen many. Or the concept of humor? If you can get the reader to laugh—or even smile—you've opened the door. One insight I always try to remember: Connect with the heart and the head will follow.

Brown discusses some of the many magic tricks English uses to gain the readers' attention and keep them glued to the page; things like openings and closing, repetition and rhythm; figurative language (pp. 153ff) and examples; using the senses (using "sense" verbs); creating suspense; and asking rhetorical questions.

At the same time, we need to remember: the large non-English-speaking readership of our audience. This makes techniques like idioms, slang, and figurative language much harder, often impossible, to understand. Try "Don't put the cart before the horse" (unless you're a Cartesian). Add to this the fact that English is one of the most unphonetic of the world languages. Think of George Bernard Shaw's example of "ghuti" as a way of spelling the word fish (**gh** as in enou**gh**. **U** as in b**u**siness. And **ti** as in na**ti**on).

All in all, a very insightful book. But sometimes it is hard cutting your way through the thickets.

Steven Darian

Steven Darian has taught at Columbia, Penn, and Rutgers. He has also taught and studied in 9-10 countries; in three, as a Fulbright scholar. He has done 14 books; popular and scholarly; nonfiction and fiction, including *Technique in Nonfiction: The Tools of the Trade.*

The Art and Science of UX Design

Anthony Conta. 2024. New Riders. [ISBN 978-0-13-806026-8. 464 pages, including index. US$49.99 (softcover).]

When I finished reading Anthony Conta's excellent book on user experience (UX), I felt the title should have been "The Process and Testing of UX Products." He organized *The Art and Science of UX Design* around the central elements of a product design methodology: understanding the problem; exploring possible reasons for the problems; and materializing the solution. It's evident that Conta certainly comes from the business side of UX with references to SWOT (strengths, weaknesses, opportunities, threats), Affinity Diagrams, Waterfall, and Agile methods that keep UX grounded in a business framework.

One of the more impressive elements of this book is its introductory chapter where Conta discusses UX in a broader sense, like Don Norman's treatment in "*The Design of Everyday Things*." He points out how we regularly face usability challenges in everyday activities, but we just may not possess the vocabulary for articulating these usability encounters. I appreciated this section because too often UX books dive directly

into test evaluation methods or actual testing without providing a context for usability in everyday life.

Conta also has one of the best discussions of low, mid, and high-fidelity wireframes. He carefully defines each one's unique characteristics and how they differ from one another. This is the first UX book that I have read that even discusses mid-fidelity wireframes and he cleverly states, "If a low-fidelity version of your product is the foundation of a house, then a mid-fidelity version is the layout and flow of that house" (p. 221).

One of the best chapters in *The Art and Science of UX Design* is about how to conduct a usability test. Conta walks the reader through each of the steps in preparing for a usability test and then discusses how to conduct the test and analyze both the quantitative and qualitative data. He also provides tips on how to present the data to management and clients. He points out how little things, like using pull-quotes from users, can call attention to big UX issues.

Although, the book reads like a volume on product design, Conta includes several tips for designing web pages and user interfaces. He discusses color, typeface, and white space, and includes several fine examples.

The only real weakness to *The Art and Science of UX Design* is its lack of information on other usability evaluation methods like heuristic evaluation and card sorting. It was also confusing as to why personas were grouped with journey maps since one clearly wants a user, not a persona, completing a journey map. Although the information about personas was very useful, it would have been better as a stand-alone chapter.

Overall, I was pleased with *The Art and Science of UX Design*. As UX becomes an increasingly popular major at the university level, I expect that we will see many more UX-centered books, which will reflect the unique experiences and focus of the specific author.

Lynne Cooke

Lynne Cooke is a Clinical Assistant Professor at Arizona State University where she teaches courses on usability, digital media, and portfolio development. She is also a member of the Arizona Chapter of STC and the Internship Coordinator at ASU.

Wireframing for Everyone

Michael Angeles, Leon Barnard, and Billy Carlson. 2023. A Book Apart. [ISBN 978-1-9526-1655-6. 158 pages, including index. US$36.00 (softcover).]

In *Wireframing for Everyone*, Michael Angeles, Leon Barnard, and Billy Carlson encourage readers to use wireframes as vehicles for thinking and communication. They argue that "Learning to create effective wireframes requires a paradigm shift toward seeing them as a flexible, creative tool, rather than as a means to an end" (p. 136). The authors warn designers about the dangers of getting too attached to individual wireframes, and they similarly caution against making wireframes too detailed or attractive, as these approaches can lock teams into ideas prematurely. Because "wireframes are both easy to make and easy to change" (p. 7), they should prompt divergent thinking, where new ideas get created, and convergent thinking, where those ideas get whittled down to the most promising options.

The opening section of the book provides several concrete tips for generating usable, productive wireframes. Most importantly, the authors implore designers to prioritize users by answering three questions: "Who will use this design solution?" "What are the user's goals?" "What problem(s) does this design address?" Only after answering these questions should designers start making wireframes. Once designers are ready to begin, the book contains with actionable ideas for getting started, such as working from the inside of the interface outward, setting time constraints, and responding to prompts that start with "What if…"? or "How might we…."? These techniques also help designers embrace failure as a necessary and fruitful part of design. As the authors encourage readers, "You'll know you're on the right track if you have a lot of great ideas and a few terrible ones" (p. 41).

The book's middle section provides a comprehensive glossary of design terms, covering both the anatomy of a user interface (elements such as buttons, links, and breadcrumbs) and basic principles for interface design (most notably, hierarchy, alignment, and clarity). This section provides helpful reference material, though experienced designers may find these chapters an overly detailed refresher on well-known concepts.

The final third of the book may be the most helpful. It places wireframes in a larger organizational context by offering advice about creating them as a team, a

process that requires not just individual effort but successful handoffs during different design phases. One incredibly helpful chapter establishes best practices for giving and receiving feedback, which should happen, at a minimum, about 30% and 90% of the way through the design process. The last chapter discusses wireframe presentations for internal teams and external clients, an important aspect of design that often gets ignored.

This holistic, informative book feels like getting casual but trustworthy advice from knowledgeable friends. *Wireframing for Everyone* contains relatable stories, insightful quotes from user experience professionals, and plenty of images to illustrate key points. It's a breezy read, short enough to finish in a few sittings but substantial enough to apply throughout the design process. Readers will come away with a new appreciation of the power and potential of wireframes.

Ryan Weber

Ryan Weber is an Associate Professor of English at the University of Alabama in Huntsville and the president of the STC Huntsville/North Alabama chapter. He also hosts the podcast *10-Minute Tech Comm.*

Writing That Gets Noticed: Find Your Voice, Become a Better Storyteller, Get Published

Estelle Erasmus. 2023. New World Library. [ISBN 978-1-60868-836-4. 352 pages, including index. US$19.95 (softcover).]
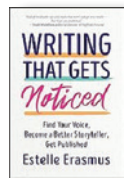
"How to Bullyproof Your Child" is an Estelle Erasmus article published in *The New York Times*. With a topic and title like that, it is no wonder the article was the most popular and most emailed the week after publication (p. xv). If you are a parent, of course, you would want to read the article because of its topic and hook. It is also understandable that Good Morning America interviewed Erasmus about the article to cover what a large audience would consider to be a topic of interest.

This article is an example of one of the many interesting and valuable articles Erasmus has written. She explains what motivates her in her writing and how she approaches the writing process in *Writing That Gets Noticed: Find Your Voice, Become a Better Storyteller, Get Published*. The hope is these explanations and Erasmus'

writing tips will help the reader become a better writer and storyteller and get published.

I thought this book might be a ho-hum read, but I was wrong. Erasmus has an engaging style full of amusing anecdotes, great stories, and wonderfully relevant quotes from other writers. I was totally drawn into the book, finding it at times hard to put down. She does cover the expected basics of writing what should be an irresistible hook and effective pitch, but she also emphasizes I think the most important part of the writing process which is to pick a topic that is of value to the reader—telling an important story.

Anyone interested in becoming a better writer, getting successfully published, and/or developing their storytelling skills would benefit from reading *Writing That Gets Noticed*. Part of what Erasmus covers is how to incubate ideas, choose an effective format (as a feature article, essay, or op-ed), and accept rejection. A writer needs to develop a thick skin early on in their career as rejection is just part of the process for any writer. Erasmus reminds us, Mark Twain said that every time you want to write "very" replace with "damn" so your editor will remove it, and the writing ends up just right (p. 236). That is an example of some of the fun it is to read *Writing That Gets Noticed*.

Jeanette Evans

Jeanette Evans is an STC Associate Fellow; active in the Ohio STC community, currently serving on the newsletter committee; and co-author of an *Intercom* column on emerging technologies in education. She holds an MS in technical communication management from Mercer University and undergraduate degree in education.

Who Wrote This? How AI and the Lure of Efficiency Threaten Human Writing

Naomi S. Baron. 2023. Stanford University Press. [ISBN 978-1-5036-3322-3. 346 pages, including index. US$30.00 (hardcover).]
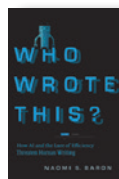
Whether artificial intelligence (AI) replaces or simply augments human writing depends on how we define language. Humans learn language through immersion, repetition, and embodied experience, a process as much sensory and tactile as intellectual. As Naomi Baron observes, "What we write is an expression of who we are" (p. 234).

Humans can also generate sentences they have never heard before or that have never been uttered before—such as Noam Chomsky's famous example, "'Colorless green ideas sleep furiously'" (p. xiii)—whereas AI can only create sentences using the rules it has been taught. It cannot spontaneously change the rules, so it cannot be unpredictable or inventive. In absolute terms, AI will not replace human writing or expression.

In relative terms, it will. AI generates text by searching its database or large language model (LLM) for the style and content typical of the genre it seeks to imitate. The larger and broader the LLM and the more specific the instruction set, the more human-like the output. Asked to write a book review, AI will scan all examples of book reviews in its LLM, then, using artificial neural networks that mimic how the brain works, will apply the conventions of book reviewing to the book in question. The larger the set of examples and the more comprehensive the rules for writing book reviews, the more the review will sound like a human wrote it. As such, AI is a highly advanced version of autocomplete or spellcheck. Its power and sophistication arise from the immense number of examples at its disposal and the reduction of writing to a vast—but always inherently incomplete—set of instructions.

Because AI works only from models, it cannot "create" a response, it can only "assemble" one from inputs it does not understand except in relation to rules and examples it has been given by humans. As Baron notes, rules enable AI to "predict the next word by drawing on word combinations most frequent in its storehouse" (p. 176), so that it "generates its own text based on the language it has been fed" (p. 190). The result is not a text created by a human, but a simulacrum of a text humans might or could create—an approximate and generic imitation.

AI may not fully replace human originality, but it will certainly increase efficiency in writing. Baron says the "goal [is] to augment rather than replace human cognition" (p. 214) and find the "right balance" (p. 213). AI can produce drafts of generic texts that humans can use as given or revise and personalize as appropriate for the intended purpose and audience.

AI will therefore continue to require oversight from humans, just like autocomplete or spellcheck. In *Who Wrote This? How AI and the Lure of Efficiency Threaten Human Writing*, for instance, a typo appears, replacing the name "Turing" with "Turning" (p. 51). Humans missed that, but so did AI.

Donald R. Riccomini

Donald R. Riccomini is an STC member and Emeritus Senior Lecturer in English at Santa Clara University, where he specialized in engineering and technical communications. He previously spent twenty-three years in high technology as a technical writer, engineer, and manager in semiconductors, instrumentation, and server development.

A Myriad of Tongues: How Languages Reveal Differences in How We Think

Caleb Everett. Harvard University Press. [ISBN 978-0-674-97658-0. 288 pages, including index. US$27.95 (hardcover).]
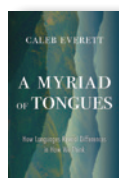
Knowing the differences in how audiences think about and use information is the key to the success or failure of a technical document. As a result, audience analysis is at the center of everything we do. In *A Myriad of Tongues: How Languages Reveal Differences in How We Think*, Caleb Everett provides a cogent and intriguing overview of how language shapes the way we think and speak.

The key strength of Everett's book is the depth of his research. He draws from a wide variety of linguistic studies, both well-known theories such as the work of Whorf, as well as ground-breaking new research. In addition, he offers personal examples from his time living in the Brazilian Amazon with the Karitâna tribe (pp. 18–19). This wealth of examples drawn from around the world, including lesser-studied and non-Western cultures, illustrates his points about how language affects our thinking in a variety of everyday situations, as well as how differently humans from separate cultures can view the world.

The thoroughness of Everett's research and the detail in which he explores linguistic and cognitive differences may also be a drawback for some readers, particularly for readers without a background in linguistic theory. Although Everett explains the linguistic concepts and theories clearly and explains the meaning of academic theories in layman's terms, his exploration of some of the finer points in linguistic differences between cultures may seem less relevant or confusing to an audience looking for a practical discussion.

Technical communicators working in localization and internationalization will find *A Myriad of Tongues* useful because Everett provides informative insights about how the language spoken by the audience can influence the way that they think. For example, many cultures do not distinguish between green and blue, or may place the dividing point between these two colors in a different hue range than North American or European cultures (p. 103). Additionally, some cultures do not order objects from left to right, as most Western cultures do. Instead, they may order objects according to the cardinal directions. For example, when sorting objects from the largest to the smallest, the largest items are placed to the north rather than to the left (pp. 58–59). These differences in turn may affect the design of products as well as the documentation.

Technical writing instructors will appreciate Everett's thorough discussion of the many facets of how language can influence cognition. The number of linguistic and practical examples Everett offers would provide illuminating material for discussion in the classroom. *A Myriad of Tongues* would also be a good addition to the syllabus of any graduate-level intercultural technical communication course.

Nicole St. Germaine

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Writing for Interactive Media: Social Media, Websites, Applications, E-learning, Games

Timothy Garrand. 2024. 4ᵗʰ ed. Routledge Press. [ISBN 978-1-0325-5424-2. 312 pages, including index. US$54.95 (softcover).]

Think about how often you use text to interact with technology. You know which button to click in your bank's app because it has a helpful label. You pull up the mobile version of a company's website to help you decide which headphones to buy. You get an in-depth science lesson at a museum by playing an educational game at a kiosk. These types of interactive media need writers to craft this text. The fourth edition of *Writing for Interactive Media: Social Media, Websites, Applications, E-learning, Games* is an updated guide to help writing students or writers accustomed to creating linear documents transition to a career in which they write for these types of applications. And the world of interactive media writing is broad. Timothy Garrand showcases many fields, including user experience, social media, website design, instructional design, and video game writing.

Professionals know that no writing happens in a vacuum, and *Writing for Interactive Media* makes it clear that the interactive media writer is part of a team. The writing is just one of many elements that make these products work. Some of the most interesting chapters of this book are the case studies that document a collaborative project from proposal to execution. These projects are diverse, representing the broad range of writing an interactive media writer could work on, including a marketing website, an educational website, interactive math and statistics lessons, and a computer game. Students and early-career professionals will appreciate this glimpse into real-world projects.

This book clearly lays out how interactive writing differs from linear writing. Besides writing a cohesive document, an interactive writer must keep up with the user's choices and path through the website or application. To teach this, Garrand pulls in lessons from information architecture, discussing and diagramming several common structures. He also describes how to communicate this information, with lessons on building flowcharts and recommendations for flowchart and planning software. This is useful information for any writer planning an interactive project but is especially helpful for linear writers interested in branching out into interactivity.

While the *Writing for Interactive Media* is a textbook, supplemental material, like exercises and sample syllabi, is available online instead of being included in the text. Instead of discussion questions and assignments, each chapter ends with a short conclusion and each main part of the book ends with a more detailed list of key points. This makes it a well-organized guide, and it could be especially helpful for any writer interested in starting a career in interactive media writing, whether they are a student or professional.

Elizabeth Hardin

Elizabeth Hardin is an STC member and a lecturer in the English department at the University of Alabama in Huntsville, where she teaches technical and business writing. She has a master's degree in English and a bachelor's degree in computer science.

UX Writing: Designing User-Centered Content

Jason C.K. Tham, Tharon Howard, and Gustav Verhulsdonck. 2024. Taylor & Francis. [ISBN 978-1-03-222740-5. 248 pages, including index. US$46.95 (softcover).]

UX Writing: Designing User-Centered Content is both a textbook and a playbook for user experience (UX) writing, as Kirk St.Amant notes in the Introduction (p. xvi). The book is divided into 3 sections (Perspectives, Processes, Practices) and 12 chapters that include an overview; 4–5 learning objectives; in-depth topic content with ample illustrations and research; a chapter checklist with key points; learner-centered discussion questions; and 1–2 learning activities designed to encourage hands-on learning experiences. At first glance, it may seem like it's geared toward undergraduate students, but it's also a useful text for practitioners who are interested in learning more about the history and practice of UX writing.

The book begins with a brief history of the user-centered content and defines UX writing as a broad practice that involves "writing *within* and *around* an interface" (p. 12) to create "successful content for products and services as experiences for different users across numerous channels" (p. 19). The Perspectives chapters also cover the importance of (inter)cultural awareness, ethical practices, and agile collaboration among cross-functional teams (pp. 46–55).

The second section covers UX writing processes, including assessing user needs and common content research practices. The authors include in-depth examples for things like gaze plots and F-pattern heat maps (pp. 78–81); step-by-step guides for content inventories, audits, and personas (pp. 102–107); and ideation, prototyping, and information architecture (pp. 120–124). I appreciated the importance of participatory design as a framework for understanding users (p. 115) provided by the authors. By highlighting content as an integral part of the design process, the authors contextualize UX writing "as design," not just an afterthought or a "last step" in the UX process.

In the third section, the authors offer tactical approaches to UX writing practices, from tackling genres and tasks to automating content with artificial intelligence (AI). Because UX writers encounter common scenarios such as tight copy and specific error states, I found the attention to microcopy and error message development especially helpful (pp.

181–187). Of course, not to be missed is the chapter on using generative AI to automate content practices. The authors' focus on the affordances of large language models (LLMs) and their use as a "writing companion" (p. 212) was compelling. They suggest UX writers "bring the HEAT" (**H**uman experience, **E**thics, **A**uthenticity, and **T**rust) when they use AI as a tool for content ideation, development, and testing (pp. 213–215). As AI continues to be personified as either a villain or a hero, *UX Writing* strikes a good middle ground—use the tools, but also understand where their sharp edges are.

As someone who works as a content designer, I found this text to be a realistic picture of UX writing across contexts. *UX Writing* will stand the test of time as an action-oriented introduction to the discipline and a guidebook for those who seek a holistic understanding of a UX writer's daily work.

Erica M. Stone

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The Eye of the Master: A Social History of Artificial Intelligence

Matteo Pasquinelli. Verso Books. [ISBN 978-1-78873-006-8. 264 pages, including index. US$24.95 (softcover).]
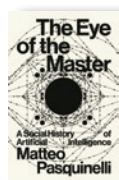
In *The Eye of the Master: A Social History of Artificial Intelligence*, Matteo Pasquinelli walks us through a long history of the division of labor "to identify the operative principle of AI in the long run" (p. 240). To help explain the relationship between labor, rules, and automation, Pasquinelli divides the book into two parts: the Industrial Age and the Information Age.

Part 1, the Industrial Age, takes us back to the 19th century when a computer was not a machine, but a human who was responsible for doing calculations by hand. Pasquinelli points out this was the first historical occurrence of a computing network because the computers were "working from home, receiving stacks of numbers to calculate and sending back results by mail" (p. 51). (Long live remote work!)

Pasquinelli describes machines in the Industrial Age as an embodiment of science, knowledge, and the general

intellect of workers. He goes into detail about Charles Babbage, inventor of the Difference Engine, which "substitutes mechanical performance for an intellectual process" (p. 52). He also writes about Ada Lovelace, celebrated as "the first woman programmer of history" (p. 68), and her work with Babbage in designing the Analytical Engine. Karl Marx is a recurring name as one who believed that the master was not an individual, but "an integrated power made up of 'the science, the gigantic natural forces, and the mass of the social labour embodied in the system of machinery'" (p. 6).

Part 2, the Information Age, gets into the nitty gritty of neural networks and cybernetics. (Cybernetics claims to have found a basic mechanism of behavior in all organisms where they use feedback to adapt to their environment.)

We learn about theories of self-organization and the early digital computer, and about pioneers like John von Neumann, Konrad Zuse, and Alan Turing who explored self-organization as a technique of computation. Pasquinelli devotes a chapter to Friedrich Hayek and connectionism that would later be known as the paradigm of artificial neural networks.

This is a dense and complex book. The breadth and depth of topics will engage readers who appreciate technical subject matters, their theories, and their complications.

Michelle Gardner

Michelle Gardner is a copywriter and content editor in the life sciences industry. She has a bachelor's degree in journalism: Public Relations from California State University, Long Beach, and a master's degree in computer resources and information management from Webster University.

Interviewing Users: How to Uncover Compelling Insights

Steve Portigal. 2023. 2nd ed. Rosenfeld Media. [ISBN 978-1-959029-78-6. 260 pages, including index. US$49.99 (softcover).]

Interviewing Users: How to Uncover Compelling Insights is a groundbreaking book that deals in-depth with an oft-overlooked topic: how to effectively conduct interviews when doing user research. Many books discuss user research and how to perform it, but none deal with the topic of interviews and their place in the user experience (UX) world so completely. In the second edition of *Interviewing Users,* Portigal includes valuable new content that makes this edition worth the investment if you are doing user research.

Like the first edition, this book devotes its first eight chapters to the interviewing process. These chapters include advice on creating a business case for interviews, dealing with interview logistics, thinking about other contextual methods, engaging in successful fieldwork, asking effective questions, doing better interviews, and documenting findings.

The last two chapters are new to the second edition and include advice on analyzing findings from interviews and reporting these findings within an organization. In addition, the second edition includes seven new sidebars from guest contributors as well as updated examples, stories, and tips for leading interviews. It also includes new sections of existing chapters about bias, remote research, ResearchOps, planning research, and research logistics.

Like the first edition, this book stands as a ready guide for everything you need when interviewing users about a product. There are detailed guides for dealing with things like disrespectful research participants (p. 111) and audio recording interviews (p. 191). There are also useful discussions on higher-level concerns such as how learning about users can inform decisions in UX (p. 4) and why it's important to embrace how participants see the world when interviewing (p. 103). The book's overall goal is to help readers understand the place of interviewing users in the modern world of UX.

Readers will thus find within the pages of this book a complete workflow for becoming competent interviewers of users. Though the book doesn't cover every possible nuance of conducting interviews—no one volume could accomplish that—*Interviewing Users* is perhaps one of the most complete books available on this topic. More importantly, it is written in terms that even a complete novice can understand, but also contains a wealth of wisdom that seasoned professionals will find useful as a reference guide to the most difficult art and science that is user research.

Guiseppe Getto

Guiseppe Getto is a faculty member at Mercer University. He is also Director of Mercer's M.S. in Technical Communication Management.

Confidence Karma: How to Become Confident & Help Others Feel Great Too

Have you ever considered the definition of "confidence"? Dr. Gary Wood in his book *Confidence Karma: How to Become Confident & Help Others Feel Great Too* says it is "an assessment of our ability to effect change. First, we assess whether there is a way to make a change and then whether or not we are up to it" (p. 7). He then goes on to introduce his first "Confidence Karma Triangle", which features actions, feelings, and thoughts as the basis of confidence building.

A main theme in the book is to "always build on what you have rather than to obsess over what you don't have" (p. 16). In Chapter 1, Dr. Wood encourages the reader to explore their current confidence status. There are quizzes that rate self-confidence, self-esteem, readiness, and willingness. Chapter 2 continues the self-evaluation with topics about how different environments and factors may cause confidence to fluctuate. Chapters 3 and 4 look at the mind–body connection with a focus on relaxation, tips for creating positive first impressions, and developing an awareness of body language and assertiveness.

Chapters 5 and 6 assist the reader in reviewing their own attitudes, values, and meaning, and in considering their needs from different perspectives: physical, safety and security, love and belongingness, esteem, cognitive, aesthetic, and self-actualization.

Chapter 7 broaches battling demons and building resilience, while Chapters 8 and 9 consider aspirations, goal setting, and linking goals with values and strengths. Finally, Chapter 10 provides a review of the book's themes.

Personally, I found this book comprehensive, engaging, and enjoyable. One of the exercises that I found very interesting was to consider my internalized "parental" messages (pp. 147–148). Questions included:

- How do you feel, act, and think based on your [parent's] view of the world (or your perception of it)?
- Do the parental sound-bites you run in your head lift you up or hold you down?
- Do you find yourself behaving in a counter-productive way and think "That's just like my mother," or "That's just like my father"?
- If the feelings, actions and thoughts of your parental state are not helping then what might you replace them with?
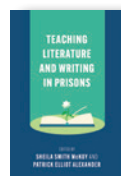
If you are serious about building your own confidence and others', and you want a wide range of techniques to try, then *Confidence Karma* is a book worth your time.

Charlotte Weddington

Charlotte Weddington is an STC member and has been a technical communicator in the manufacturing sector since 2015. She has a background in ISO 9001 documentation and currently works for Hunter Douglas as a Technical Writer.

Teaching Literature and Writing in Prisons

Teaching Literature and Writing in Prisons is a collection of essays providing resources for instructors who teach in jails and prisons. Although the field of critical prison studies has expanded and national attention to social justice issues has increased, Sheila Smith McKoy and Patrick Elliot Alexander realized that instructors in prisons are hampered by limited pedagogical resources. This volume is designed to provide information for instructors, whether they are incarcerated or nonincarcerated, on "course development, pedagogical strategies, publication…and presentation of imprisoned students' scholarly and creative work" (p. 3).

McKoy and Alexander present an historical context of prison education to help set the scene for some of the challenges faced by today's instructors. They begin with Frederick Douglass, a nineteenth-century enslaved person, who wrote of how materials for reading and writing were routinely withheld from him. People in prison face a similar scarcity of materials. Incarcerated learners "constitute the fastest-growing population of Americans with limited or no access to reading, writing, higher education opportunities, or learning communities" (p. 4). At the same time, more people in

prisons are enrolling in courses and more resources are needed for their instructors.

Teaching Literature and Writing in Prisons is divided into two sections. The first is "Purpose." Essays in this section ask the question: "What is the purpose of literary study, writing, and the performed word in jail and prison classrooms?" (p. 6). Essay topics in this section address, for example: how community is formed in studying literature; creating a space for creativity that doesn't mimic the prison power structure; how incarcerated people and outside teachers can share in creating inclusive learning; the role of performance in exposing abuse; and changing preconceived ideas of education.

Part Two, "Practices," asks: "What are specific pedagogical strategies for teaching literature and writing in particular carceral classroom contexts?" (p. 6). These essays echo the advice in the first section of the book to create the learning space based on the needs of the students. Essays cover topics such as prison book clubs, specific text-driven and dialogue-driven experiences of the essayists, the importance of shared classroom leadership, and importance of students publishing their own work. This section concludes with advice on self-care for those who teach and volunteer in the prison setting.

The authors make a special point of bringing attention to the terminology used throughout *Teaching Literature and Writing in Prisons.* They refer respectfully to incarcerated people without using stigmatizing terms often heard and read about people in prison—a good model for any writer.

Contributors to *Teaching Literature and Writing in Prisons* include authors of various backgrounds and areas of expertise, some of whom have been or are incarcerated. Their biographies are listed at the end of the volume. The essays themselves each contain notes and a bibliography, a self-contained format that is convenient for reading.

Linda M. Davis

Linda M. Davis is an independent communications practitioner in the Los Angeles area. She holds an MA in Communication Management and has specialized in strategic communication planning, publication management, writing, and editing for more than 25 years.

Teaching Comedy

A reviewer and his editor walk into a bar. "Ouch!" says the reviewer. "Sorry," the editor replies. "We set the bar lower for reviewers."

Despite its title, *Teaching Comedy* isn't about writing jokes, though you may learn a few tricks along the way. Rather, it focuses on how comedy can teach students to think about key aspects of communication such as audience and context. Comedy interests, attracts, and motivates students. As editor Bev Hogue notes, "Comedy can build community, ease personal and shared pain, and enhance connections among cultures" (p. 2). Comedy has "a concern for subverting cultural norms and holding up to the world a fun-house mirror that may be distinctly unfunny" (p. 4). As in satire, mirrors can produce distorted reflections, with the distortion itself part of the message.

An academic text on humor challenges the maxim that the easiest way to kill a joke is to dissect it. *Teaching Comedy* sidesteps that fate by showing teachers how to use comedy (from stand-up routines to novels) to reveal universal truths, such as the importance of an audience's context (history, power structures, racism). Though humor's culturally bound, understanding it also requires genre knowledge: comedy has its own vocabulary, jargon, and structural conventions. For example, most comedy begins with a *mise en scène* to establish the abovementioned context. Technical communicators from all genres can learn much about identifying the context required for communication to succeed. *Teaching Comedy* also reveals the pitfalls of cross-cultural communication with diverse audiences and how to mitigate the problem. Many chapters describe a teacher's first-time journey learning how to teach comedy, and include tips, tricks, and pitfall warnings. Authors emphasize modern pedagogical techniques, such as facilitating and guiding rather than controlling the discourse and encouraging students to work together to explore and discuss the material and learn from each other's insights.

Hogue doesn't establish consistent terminology for all contributors, so there's occasional confusion that results when contributors discuss different things under the same name or the same thing under different names. Humor is neither comedy nor satire; rather,

each borrows from the others. I'd have preferred to see these terms established and used consistently. Unfortunately, there are no visuals to make descriptions of humor's visual aspects concrete, and few Web links to videos or sounds. Ironically, there are few examples of actual humor, leading to many abstract descriptions that should have been grounded in example, particularly for subjects such as "graphic novels" that unite text with illustration.

Teaching Comedy is mostly light on jargon, with exceptions such as "Problem based learning framework informed by health and environmental humanities and postcolonial cultural studies" (p. 90). But with a little work, even non-academics will learn something. Humor encourages us to think more deeply—a skill that can be applied far more widely than just for teaching comedy. Hogue's book will inspire you to apply that skill.

Geoff Hart

Geoff Hart is an STC Fellow with more than 35 years of writing, editing, and translation experience. He's the author of two popular books, *Effective Onscreen Editing* and *Write Faster With Your Word Processor.*

Graphic Design School: The Principles and Practice of Graphic Design

David Dabner, Sandra Stewart, and Abbie Vickress. 2023. 8th ed. Quarto Publishing plc. [ISBN 978-1-394-18566-5. 208 pages, including index. US$62.95 (softcover).]

Graphic Design School: The Principles and Practice of Graphic Design is an indispensable resource for students first stepping into the field, but it also works well for anyone applying design skills on the job, from creating social media posts, designing websites, creating graphics to working user experience/user interface (UX/UI) for mobile devices.

Its attention to detail and updated examples make it a must-have reference to which readers will return often. Those with earlier editions might find this 8th edition valuable for its examples showcasing the latest apps, product branding, book designs, as well as for its updated links to contemporary designers and their work, including a list of design-specific online resources.

The book is an exemplar of design, with a keen attention to detail. For example, the book has two parts, each balanced with four chapters, and those with an eye for design will pick up that the numerals 1 and 2 for the parts are colored the same as those numerals for chapters 1 and 2, with the size and stroke distinguishing the levels. The full-color pages are balanced and consistent in form, simplifying reader comprehension. The book demonstrates its guidelines through its pristine design.

Part 1, "Principles," includes chapters on research, composition, typography, and color. For those working in technical communication, perhaps the most indispensable chapter is the one on typography, which begins with a history lesson on lead type and moves quickly into digital typefaces, type families, ornaments, and glyphs. Part 2, "Practice," applies the principles from Part 1, including chapters on tools, production, and web design as well as a chapter that guides students toward design careers that fit their interests, including a list of the top designers in each area. This beginner guidance is crucial, and often missing from senior seminars or final courses. Any serious student should immediately appreciate the wealth of knowledge in this text.

The chapters are chunked into modules, with each module containing headings, brief paragraphs, bulleted lists balanced with images to support the text, and a glossary as needed. This chunking of information into bite-sized pieces is an effective way to teach material because readers can focus on one concise lesson at a time. Instructors can dip into modules from various chapters each week of class or they can teach the text in sequence. Each chapter ends with a series of assignments that instructors can use in class or as homework, and the assignments are pedagogically sound, putting the chapter contents into practice in a way that builds students' skills.

Finally, the last chapter, on career paths, guides students through various disciplines under the graphic design umbrella. Career topics are also sprinkled throughout the book. For example, Chapter 7 contains a module, "Initial consultations," that discusses how to work with clients, from preparing for pitches to estimating scope and costs. Another discusses the relationship a designer should have with a printing press. Given its solid foundation and insightful career guidance, *Graphic Design School* is required reading for anyone serious about entering the field of graphic design.

Kelly A. Harrison

Kelly A. Harrison, MFA, teaches technical communication at Stanford University and has taught a range of writing courses at San José State University and San Francisco State University. She has over 15 years of experience as a technical writer, editor, and manager. She currently writes, edits, and consults and she is the Associate Editor for *West Trade Review*.

HTML, CSS, & JavaScript All-in-One for Dummies

Paul McFedries. 2023. John Wiley and Sons, Inc. [ISBN 978-1-394-16468-4. 828 pages, including index. US$39.99 (softcover).]

Back at the dawn of the internet, if you wanted to create a website, you had to write the HTML code by hand. This involved, for me, opening Notepad in Window 3.1 and manually entering all the HTML tags and formatting, and then FTPing the file to a webhost. While my elementary website was not great, it did land me a college internship at a hospital running their website. Which also involved my editing files in Notepad and then using a dialup modem to transfer the files to their webhost. My guide during these edits was a website that taught you what the HTML tags did. I printed that site in its entirety, about twelve printed pages, and carried it back and forth to my internship for reference. Fortunately for the world, the internet has evolved beyond the simplicity of such hand-coded sites. However, to understand how the structure of websites works, an understanding of website architecture is required. That is where *HTML, CSS, & JavaScript All-in-One for Dummies* comes in. This massive tome is billed as six books in one, teaching you how a website is structured in HTML, how it is formatted using CSS, and how it is enhanced by JavaScript.

As part of the Dummies series, *HTML, CSS, & JavaScript* follows a standard format. Concepts are well explained, and the book builds on earlier knowledge that it presents. Callouts draw attention to important ideas, and illustrations have very descriptive captions. The book is part training manual and part reference book. You can read it from cover to cover, all 830 pages of it, or you can find the concept you want to focus on and read that section as standalone content. If you do the latter and there is a term or concept that was explained earlier in the book, it is referenced in that section so you can do additional research if needed. The tone is light, friendly, and informal but does not hold back on sharing useful information. Many examples fill the book to help illustrate concepts which might otherwise be difficult to describe.

If you have ever looked at content and thought that you could do a better job with the formatting and delivery, then this book is an invaluable resource. It will help you evaluate the structure of HTML content, adjust the formatting using CSS, and tweak the display by adding JavaScript. Also included are online supplements, such as example files, cheat sheets, and bonus chapters. Overall, this weighty tome is an excellent addition to anyone looking to learn about website design.

Timothy Esposito

Timothy Esposito is an STC Fellow, current STC President, and past president of the STC Philadelphia Metro chapter. He is the Manager of Logistics Documentation at Oracle with more than 20 years of technical communication experience.

Negotiation Made Simple: A Practical guide for Solving Problems, Building Relationships, and Delivering the Deal

John Lowry. 2023. HarperCollins Leadership. [ISBN 978-1-4003-3632-6. 240 pages, including index. US$24.99 (hardcover).]

Negotiation Made Simple: A Practical guide for Solving Problems, Building Relationships, and Delivering the Deal provides a straightforward approach to negotiation through four sections: Manage Yourself, Ambitious Competition, Creative Cooperation, and Deliver the Deal. In "Manage Yourself," John Lowry focuses on helping us understand who we are, our natural tendencies, and preparing strategically for the negotiation. The next two sections discuss two different negotiation approaches: Ambitious Competition and Creative Cooperation. The last section is devoted to closing the deal.

Regardless of our natural tendencies, we will be involved in both competitive and cooperative negotiations. We will have our preferred approach. The other party will have their approach. We need to understand how both we and the other party are approaching the negotiation.

As a mentor to introverts, I've seen that most of my mentees would prefer to avoid any type of competitive negotiation, often because they don't want confrontation. Following the approaches in the book will help introverts achieve those results and remove some of the emotion. Here's is a list of the key concepts that resonated with me:

- **Knowing yourself**. Learning to take a strategic approach to negotiations helps remove the emotional component and helps you gain what you need to through the negotiation.
- **You don't have to be a jerk**. You don't have to treat your opponent poorly, nor respond in kind if they treat you poorly. You can honor the other party, work to understand their position, and try to find wins for both sides.
- **The importance of empathy**. Recognizing and acknowledging what the other party is trying to achieve and why will lead to a smoother, more mutually beneficial result.
- **Make the opening offer and ask for more than you'll settle for**. If you make the opening offer, you establish the baseline for the negotiation. If you recognize that most negotiations end somewhere in the middle of what both sides are seeking, you'll realize that you must ask for what may be a much larger sum or concession than you will settle for. You may also find that your opening offer may be accepted!
- **Sometimes you need to walk away**. Sometimes parties may start so far apart that there is no acceptable midpoint. Sometimes you may need to walk away to show the other party you're serious.

The book provides two valuable tools:

- **The Negotiator's Preparation Checklist** that helps in ensuring you are considering all facets of the upcoming negotiation, helps in assuring your team is on the same page, and helps in ensuring you maintain a strategic approach.
- **Negotiation Made Simple Self-Assessment** helps you understand how well you know (and follow what you know) in a negotiation. Lowry recommends completing this self-assessment before reading the sections on negotiations and delivering the deal.

Before starting this read, I was afraid when I started reading this book that it would focus on being a salesperson and winning the deal. To the contrary, I found the strategic and analytical approach to negotiation valuable and look forward to approaching my next negotiation more positively, strategically, and successfully.

Ben Woelk

Ben Woelk, CISSP, CPTC, is an STC Fellow, a past STC president, and is a CPTC Foundation trainer. He is Governance, Awareness, and Training Manager for the Information Security Office at the Rochester Institute of Technology. Ben is an adjunct instructor in Cybersecurity Policy and Law and Technical Writing and Editing.

What is Cultural Criticism?

Francis Mulhern and Stefan Collini. Verso. [ISBN 978-1-80429-339-3. 224 pages, including index. US$11.99 (digital).]
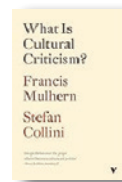
What is Cultural Criticism? Is organized as a debate between two prominent critics of European intellectual culture: Francis Mulhern and Stefan Collins (p. viii). Each chapter is taken from previous works published by the authors, beginning with excerpts from Mulhern's *Culture/Metaculture*, followed by Collins's response to this work, and so forth. In the text, the two authors engage in a discussion of, as the title implies, the nature of the field of cultural criticism. Collini argues that cultural criticism can include modern culture, such as modern pop culture movements, whereas Mulhern takes a more traditional stance, arguing that cultural criticism transcends modern fads and should engage with the elements of "deep culture," such as national history and political movements.

One of the main drawbacks of *What is Cultural Criticism?* for academics and practitioners in technical communication is that the text assumes that the reader is well-grounded in the theory and scholarly works in cultural criticism. The first chapter, drawn from Mulhern's text *Culture/Metaculture,* begins right away with describing the tension between the modern field of cultural studies and the philosophical notion of Kulturkritik, which is in European philosophy, a pessimistic viewing of "the emerging symbolic universe of capitalism, democracy and enlightenment" (p.5). Throughout the work, much name-dropping of philosophers, poets, and cultural critics ensues, which I found difficult to follow as someone outside of the field.

A further issue with *What is Cultural Criticism?* involves the Euro-centered nature of the debate between the scholars. Aside from a brief mention of the fact that the field of cultural criticism is beginning to engage with non-European frames of reference, the text focuses on European events, schools of thought, and examples. Part of this issue no doubt occurs because of the length of time over which these passages were originally published—Mulhern's *Culture/Metaculture* was originally published in 2000. However, scholars looking for a more inclusive view of cultural criticism will not find it here.

Despite these drawbacks, the multi-layered debate between two scholars at the top of their field is a rare treat in academia. The process of publishing and responding to the published work is one that takes years, if not decades, and reading this distilled version nicely illustrates the mechanisms of how academic discourse shapes a field. Graduate students in technical communication could learn much from this text, particularly regarding how an academic argument is framed and how to engage with the work of other scholars civilly and productively. I could see a graduate-level course in rhetoric using passages of *What is Cultural Criticism?* to illustrate the process of academic discourse, provided that enough groundwork was laid for the students to understand the context of the discussion.

Nicole St. Germaine

Nicole St. Germaine is a Professor of English and the Coordinator of the Technical and Business Writing Program at the Natalie Z. Ryan Department of English at Angelo State University.

Duly Noted: Extend Your Mind Through Connected Notes

Jorge Arango. 2024. Rosenfeld Media. [ISBN 978-1-959029-04-5. 200 pages, including index. US$39.99 (softcover).]

Jorge Arango says, "Note-taking, whether it is on scraps of paper, notebooks, or smartphones, is a tool for thinking and knowing that practically everybody uses… to create 'knowledge gardens'" (p. vii). Extending your mind through connected notes involves making your notebook or smartphone your most powerful tool for super-charging your thoughts and ideas. Learning the difference between "*taking* notes and *making* notes" is an interesting concept. Note-taking is "about capturing ideas for recall" and thinking of all your notes as a "knowledge garden," while "note-making is about generating new ideas." You constantly build your "knowledge garden" by "continually learning new things…in areas that rely on acquiring, managing, and deploying knowledge," with your effectiveness depending on your ability to "find, assimilate, and produce information" (p. xiv).

Duly Noted focuses on three simple rules for digital note-taking (p. xv): (1) make short notes; (2) connect your notes; and (3) nurture your notes. Each chapter includes three actionable sidebars: (1) Notable Note-Taker shows how people use notes to help their thinking; (2) Side Notes provides advice and tips to improve your own note-taking; and (3) Working Notes are how-to exercises that help you get started.

We should write notes with the intent of giving us time to revisit them later (note-taking) and then thinking of making those notes into longer pieces of prose (note-making). Notes are for remembering, transcribing, recording, learning, researching, generating, planning, communicating, and fidgeting. When attending educational events, conferences, or meetings, we take notes to keep our attention and not forget that one key nugget the speaker(s) shared. We take notes by hand using pen and paper or index cards; writing in the margins, on sticky notes stuck to the page of a book or photograph where the content lies; or with electronic devices.

We write lengthier notes when using paper and pen, but with digital note-taking we need to think differently about how we capture the information. When writing notes, use sticky notes for short-term reminders and digital notes for long-term thoughts you will later expand on.

Note-making is different from note-taking in that you are writing down what you are thinking to make sense of ideas you've heard. If you draw mind maps or sketch out your notes, you are note-making. These are not salient pieces of information that equal a full deliverable. Arango says in his blog, "Thinking isn't just happening in your brain and then being captured on paper; instead, you're thinking *with* and *on* the paper" (https://jarango.com/2023/01/26/note-taking-and-note-making).

Whether using note-taking or note-making, consider using Arango's Minimally Viable Note (MVN) concept. This involves writing a clear name for the note with a call to action, the next steps, where the idea came from, and the date.

Duly Noted is a useful book for those wanting to learn new, unique techniques for creating digital notes. The book also teaches how to build a "knowledge garden" to store your notes for future growth.

Jackie Damrau

Jackie Damrau is an STC Fellow with more than 25 years of technical communication experience. She serves STC as the book review editor for Technical Communication.

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STC Summit Pre-Conference Courses (half day)	3
STC Annual Summit	8
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Sean C. Herring, Editor

The following articles on technical communication have appeared recently in other journals. The abstracts are prepared by volunteer journal monitors. If you would like to contribute, contact Sean Herring at SeanHerring@ MissouriState.edu.

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Audience analysis

Expression of customer (dis)satisfaction in online restaurant reviews: The relationship between adversative connective constructions and star ratings

Baker, M. J., & Hashimoto, B. (2024). *International Journal of Business Communication*, *61*, 148-180. https://doi.org/10.1177/23294884231200245

"Online restaurant reviews contain expressions of customer expectations in prose as well as in star ratings that indicate overall customer satisfaction. In prose, one way customers communicate that expectations are or are not met is through a grammatical construction called adversative connectives (ACs) (i.e., constituents such as *but, although, however*, and *even though*). In the present study, [the authors] examine the relationship between star ratings and customers' use of ACs by employing a combination of content analysis, mixed-effects models, and thematic analysis in a corpus of nearly 35,000 online reviews for restaurants located in the United States. The results reveal an important way customers communicate their (dis)satisfaction online. Specifically, the statistical modeling indicates that the ACs used and the content they emphasize have a significant relationship with star ratings. Restaurant owners can use these findings to focus on the most important information in customer reviews, especially when they are sifting through many reviews or through reviews for which no summative rating is provided."

Katherine Wertz

Communication

A metainvestigation of speaking skills: Practice, feedback, and self-directed efforts

Nandagopal, S. K., & Philip, R. S. (2023). *IEEE Transactions on Professional Communication*, *66*(2), 170–185. https://doi.org/10.1109/TPC.2023.3251140

"**. . . .** This article documents a speaking assessment carried out among 120 engineering students who have undergone two semesters of Technical English courses in the final year of their study. The students from diverse departments opted for the English for Competitive Exams elective course to improve their English language proficiency. The objective of the elective is to train the learners in essential language components for facing high-stakes competitive exams with an integrated language skills approach. . . . Students were trained on speaking skills as part of a semester-long online course, and an assessment for speaking skills was designed in which students answered 10 self-reflective questions about their perception and usefulness of practice, feedback from the instructor and peers, and self-directed efforts. Each student's recorded audio file of an average of 11 minutes 24 seconds was uploaded to the learning management system (LMS) as part of the assessment. A qualitative and interpretative investigation of their answers reflecting their learning experiences during the semester, based on the activities and self-regulation, and their self-rating were analyzed thematically." The authors conclude that a teaching strategy combining "practice, feedback, and self-directed efforts with a culminating phase of oral self-reflection is highly beneficial in developing speaking skills in engineering courses focusing on technical communication."

Lyn Gattis

Design

Designing user interface toggles for usability

Al-Jasim, A., & Murano, P. (2023). *Journal of User Experience*, *18*(4), 175–199. [doi: none]

"Toggles are used extensively by all major software vendors and often in the form of sliders. Although they mostly all share an on or off functionality, there are differences in how designers and developers represent these actions in the user interface. There can also be differences in the kind of state changes these toggles operate. [The authors] present in this paper a new contribution concerning the design of usable UI toggles. [They] designed and developed a series of prototypes that were evaluated experimentally and subjectively by real participants. The results clearly show that certain designs currently in use create confusion and negative user perceptions and therefore should be avoided. [The authors] present a series of toggle design guidelines based on the results that, if followed by designers and developers, will help to produce more usable UIs for better user experiences."

Lyn Gattis

Diversity

The ethics of inclusion, exclusion, and protection in The Green Book

Walwema, J., Colton, J., & Holmes, S. (2024). *Technical Communication Quarterly*, *33*,19–37, https://doi.org/10.1080/10572252.2023.2184498

"This article explores the ethical complexity of inclusion, exclusion, and protection in TPC, drawing upon a historical technical document, The Green Book, which helped Black American travelers in the 1930-60s locate safe leisure spaces in a segregated society. We examine The Green Book through the antiracist thinker Kendi to understand some of the ethical limits of the binary of inclusion/exclusion and identify necessary forms of protection for historically- and multiply-marginalized groups."

Rhonda Stanton

Education

A field wide snapshot of student learning outcomes in the technical and professional communication service course

Griffith, J., Zarlengo, T., & Melonçon, L. (2024). *Journal of Technical Writing and Communication*, *54*(1), 46-68. https://doi.org/10.1177/00472816221134535

"Using the technical and professional communication service course as the site for research, and student learning outcomes (SLOs) as the specific focus, [the authors] gathered, coded, and analyzed 503 SLOs from 93 institutions. [Their] results show the top outcomes are rhetoric, genre, writing, design, and collaboration. [The authors] discuss these outcomes and then…offer programmatic implications drawn from the data that encourage technical and professional communication program administrators and faculty to use common SLOs, to improve outcome development, and to reconsider the purpose of the service course for students."

Anita Ford

Ethical issues

Embracing cultural differences to ensure ethical publication practices

Lee, J. & Hesp, B. (2023). *American Medical Writers Association Journal*, *38*(4), 5-6

"Ethical publication practices apply universally, but differing cultural contexts can alter the interpretation and application of guidelines. In particular, collaborating with colleagues and authors in the Asia-Pacific region can sometimes be confusing and frustrating when attempting to align expectations between all parties involved in medical writing projects. Engaging with colleagues in other regions to develop flexible, culturally appropriate processes can help strengthen working relationships, expedite project completion, and adhere to publication best practices."

Walter Orr

Health communication

ChatGPT for healthcare services: An emerging stage for an innovative perspective

Javaid, M., Haleem, A., & Singh, R. P. (2023). *Bench Council Transactions on Benchmarks, Standards and Evaluations*, *3*(1). https://doi.org/10.1016/j.tbench.2023.100105

"Generative Pretrained Transformer, often known as GPT, is an innovative kind of Artificial Intelligence (AI) which can produce writing that seems to have been written by a person. OpenAI created this AI language model called ChatGPT. It is built using the GPT architecture and is trained on a large corpus of text data to respond to natural language inquiries that resemble a person's requirements. This technology has lots of applications in healthcare. The need for accurate and current data is one of the major obstacles to adopting ChatGPT in healthcare. GPT must have access to precise and up-to-date medical data to provide trustworthy suggestions and treatment options. It might be accomplished by ensuring that the data used by GPT is received from reliable sources and that the data is updated regularly. Since sensitive medical information would be involved, it will also be crucial to consider privacy and security issues while utilising GPT in the healthcare industry. This paper briefs about ChatGPT and its need for healthcare, its significant Work Flow Dimensions and typical features of ChatGPT for the Healthcare domain. Finally, it identified and discussed significant applications of ChatGPT for healthcare. ChatGPT can comprehend the conversational context and provide contextually appropriate replies. Its effectiveness as a conversational AI tool makes it useful for chatbots, virtual assistants, and other applications. However, we see many limitations in medical ethics, data interpretation, accountability and other issues related to the privacy. Regarding specialised tasks like text creation, language translation, text categorisation, text summarisation, and creating conversation systems, ChatGPT has been pre-trained on a large corpus of text data, and somewhat satisfactory results can be expected. Moreover, it can also be utilised for various Natural Language Processing (NLP) activities, including sentiment analysis, part-of-speech tagging, and named entity identification."

Yvonne Wade Sanchez

Emotional shifts in health messages as a strategy for generating talk and behavior change

Peinado, S. & Nabi, R.L. (2024). *Health Communication*. Advanced online publication. https://doi.org/10.1080/10410236.2024.2305552

"Although talk generated by health messages can spread message content and promote positive behavior change, little is known about what message features may be more likely to prompt conversation. Given theoretical and research support for sequential emotional experiences to increase the intensity of emotion and the extent of engagement with the emotional content - both of which are expected to positively influence talk and persuasion – [authors] examined whether shifts in emotion within a health message influenced these outcomes. In a longitudinal experiment, [authors] compared the effects of two texting while driving prevention messages containing a shift in emotional valence (negative to positive and positive to negative) with two single-valence emotional messages (negative-only and positive-only) on talk and persuasion (N = 333). Results indicated that emotional shift messages generated more talk than single-valence messages because they elicited greater emotional intensity and deeper message processing. These variables also mediated the effect of emotional shift messages on persuasion both immediately following message exposure and one week later, though intentions to avoid texting while driving immediately after message exposure had a greater influence on beliefs and behavior at the one-week follow-up than talk. These findings suggest that talk may play a more important role in spreading message content and reinforcing message-generated change rather than creating change itself."

Walter Orr

Information management

"We're not proud of the cases we've been involved in": Crisis resolution on Facebook using conversational human voice

Holmgreen, L.-L. (2024). *International Journal of Business Communication*, *61*, 70-91. https://doi.org/10.1177/23294884231200861

"The article discusses the use of conversational human voice (CHV) to address negative eWOM on brand-generated social media platforms. Using the case of a crisis-ridden Danish bank, the article investigates the use of CHV outside service failures and its effects on critical publics in the context of intentional crises. The data consist of posts and comments from the bank's Facebook page, following allegations of money laundering. The analysis reveals that CHV is used extensively by the bank to counter criticism; however, the degree to which the strategy is standardized or tailored seems to depend on whether users appear once, have a regular presence, engage in dialog, and are known to the bank's employees. These findings suggest that while CHV is intended for more personalized communication to make users more sympathetic to the organization, its use will have to be contextualized to be effective."

Katherine Wertz

You are telling the story yourself": Defining and developing narrative pictorial warning labels

Ma, Z., Hintz, E.A., Cassano, B. (2023). *Health Communication*. Advanced online publication. https://doi.org/10.1080/10410236.2023.2293324

"Pictorial warning labels (PWLs) featuring narrative content are promising strategies for communicating health risks and motivating behavior change. The objectives of this study were to (1) identify what intrinsic features a PWL must have to be constructed as a narrative and (2) uncover in what ways narrative PWLs are perceived as being (in)effective. Seven online focus groups were conducted via Zoom with moderate and heavy drinkers (n = 30). Participants discussed a series of mockup PWLs designed to communicate the cancer risk of alcohol. The discussion revealed that a static image must include character, causality, and setting to help individuals construct the story. Specifically, the character should be discernible and believable so that individuals can infer risk information. Moreover, the connection between the image and text should imply a causal relationship between alcohol drinking and cancer risks. Lastly, there should be sufficient relevant background or context information. When discussing the label effectiveness, most participants thought narrative PWLs were more effective than graphic, non-narrative PWLs at informing consumers about the cancer risk of alcohol. Their reasoning included narrative PWLs (1) being easy to understand, (2) evoking curiosity and imagination, (3) eliciting sympathy for the character, (4) not causing aversion, and (5) increasing risk perceptions. This study contributes to the narrative persuasion research and offers practical implications for designing image-based narratives."

Walter Orr

Intercultural communication

Unpacking the art of customer complaint handling in Spanish and British telecom emails: A cross-cultural webcare study with a human touch

Elektra Van Herck, R., & Vangehuchten, L. (2024). *International Journal of Business Communication*, *61*, 115-147. https://doi.org/10.1177/23294884231201142

"In spite of the rise of new media in a B2C context, companies still prefer to handle complaints privately. As such, many complaints are handled via email resulting in a professional communication genre of its own. In this study [the authors] performed a cross-cultural genre analysis to understand the specific discourse structure of the moves within response mails to complaints, on the one hand, and the importance of the communicative function of *Conversational Human Voice* within this genre, on the other. With this aim, [the authors] collected authentic organizational email replies to complaints from telecom companies active in the UK and Spain (36 and 44 emails respectively). The results indicate that the British and Spanish data sets show a similar discourse structure in terms of move frequency. The submoves that are prototypical

for all data sets are *Greeting*, *Explanation*, *Conclusion*, and the closing submoves *Sign-off* and *Signature*. The data sets differ mainly in their frequency for the interpersonal submoves *Empathy*, *Gratitude*, and *Apology*, which are more prevalent in the English corpus, and the more business-oriented moves, such as *Contact reason*, *Marketing*, and *Future contact*, which are mainly present in the Spanish corpus. This suggests that organizational email replies to complaints are a rather conventionalized genre, with some linguacultures putting more effort in company-customer interactions by using more interpersonal submoves. Regarding the cross-cultural analysis of the expression of *Conversational Human Voice* [the authors] observed an influence of the respective linguacultures in the sense that the Spanish data are less personal and less invitational than the English mails, although they present more empathetic intensifiers. Furthermore, both data sets show only a limited extent of informal language. [The authors] evaluate these findings in the light of previous work."

Katherine Wertz

Linguistics

(Im)personalization in German and English negative online reviews: Contrasts, comparisons, and cognitive implications

Fastrich, B. (2024). *International Journal of Business Communication*, *61*, 39-69. https://doi. org/10.1177/23294884231200249

"The current study contributes to the demand for more multilingual analyses of online reviews, comparing English and German-language hotel reviews on Booking.com. Specifically, it seeks to shed light on the linguapragmatic contrast of the German speaker showing a preference for more 'content-orientation' and the English speaker more 'person-orientation' by exploring the use of the first-person perspective (FPP) in online reviews. It further integrates cognitive linguistic theories of construal, considering whether the results implicate not only a difference in the assumedly intentional rhetorical preferences of speakers but also cognitive differences in ways of experiencing a hotel stay, which might also have important implications for how hotels tailor their

language-specific responses and maybe even how hotels design their service and intended customer experience. The findings show that FPP did occur in more English reviews, indicating more personalization and thus a more personalized cognitive processing of the hotel stay. However, when FPP was identified in German reviews, it occurred at a similar frequency to English reviews, reflecting a similar degree of subjective involvement. The findings may thus indicate that while this contrast was robust on a whole, linguacultural differences may play an increasingly smaller role as online genres merge into more global styles, a trend that communications practitioners must increasingly consider."

Katherine Wertz

Public relations

Calming the storm: How non-negative messages from fellow consumers can dispel negativity in a social media firestorm

Widdershoven, S., Pluymaekers, M., Zourrig, H., Sinclair, P., & Bloemer, J. M. M. (2024). *International Journal of Business Communication*, *61*, 18-38. https://doi. org/10.1177/23294884231200244

"This research explores the potential of non-negative consumer messages to counteract negativity in social media firestorms through emotional contagion. 1,186 tweets were examined in response to a McDonald's Japan service issue, revealing that non-negative messages tend to align emotionally with preceding messages. This suggests a temporary mitigation of negativity. Investigating emotional contagion within social media firestorms challenged the prevailing notion of negativity bias, indicating a focus on maintaining a positive affective state. Practical implications suggest organizations should monitor and acknowledge non-negative messages during crises to identify advocates and gain insights into subnetwork impact. Incorporating elements from contagious non-negative posts in responses can help mitigate reputational damage. This research contributes to a deeper understanding of emotional contagion dynamics in social media firestorms, aiding organizations in managing their online reputation during crises."

Katherine Wertz

Expressing and responding to customer (dis)satisfaction online: New insights from discourse and linguistic approaches

"In the current era of digitalization, customers are routinely invited to express their (dis)satisfaction with a product or a service and to provide recommendations for other prospective customers by writing reviews on a variety of online social media platforms. Such forms of electronic word-of-mouth have been found to strongly influence other consumers' purchase decisions. In the case of negative reviews, the negativity expressed in a particular comment can spread to the whole community, which can damage a company's reputation and profits. In an attempt to take consumer feedback into account, companies engage in 'webcare.' This type of online service encounter has been defined by van Noort and Willemsen as 'the act of engaging in online interactions with (complaining) consumers, by actively searching the web to address consumer feedback (e.g., questions, concerns, and complaints).' Following-up on these developments, scholars have started to research the communicative strategies used by companies to address consumer feedback and those used by (dis)satisfied customers to voice their (dis)satisfaction from the perspective of discourse analysis and linguistic pragmatics, paying attention to their linguistic realizations and their interactional dynamics. The aim of this Special Issue is to further expand our knowledge on the discourse-pragmatic strategies used in the interaction of (dis)satisfied customers and companies online, and on how these different strategies influence other prospective customers' perceptions, ultimately impacting their purchase decisions. In doing so, it positions itself at the crossroads of linguistics, communication, and business studies."

Katherine Wertz

Research

AI-driven disinformation: a framework for organizational preparation and response

"Purpose Disinformation, false information designed with the intention to mislead, can significantly damage organizational operation and reputation, interfering with communication and relationship management in a wide breadth of risk and crisis contexts. Modern digital platforms and emerging technologies, including artificial intelligence (AI), introduce novel risks in crisis management (Guthrie and Rich, 2022). Disinformation literature in security and computer science has assessed how previously introduced technologies have affected disinformation, demanding a systematic and coordinated approach for sustainable counter-disinformation efforts. However, there is a lack of theory-driven, evidence-based research and practice in public relations that advises how organizations can effectively and proactively manage risks and crises driven by AI (Guthrie and Rich, 2022).

Design/methodology/approach
As a first step in closing this research-practice gap, the authors first synthesize theoretical and technical literature characterizing the effects of AI on disinformation. Upon this review, the authors propose a conceptual framework for disinformation response in the corporate sector that assesses (1) technologies affecting disinformation attacks and counterattacks and (2) how organizations can proactively prepare and equip communication teams to better protect businesses and stakeholders.

Findings
This research illustrates that future disinformation response efforts will not be able to rely solely on detection strategies, as AI-created content quality becomes more and more convincing (and ultimately, indistinguishable), and that future disinformation management efforts will need to rely on content influence rather than volume (due to emerging capabilities for automated production of disinformation). Built upon these fundamental,

literature-driven characteristics, the framework provides organizations actor-level and content-level perspectives for influence and discusses their implications for disinformation management.

Originality/value

This research provides a theoretical basis and practitioner insights by anticipating how AI technologies will impact corporate disinformation attacks and outlining how companies can respond. The proposed framework provides a theory-driven, practical approach for effective, proactive disinformation management systems with the capacity and agility to detect risks and mitigate crises driven by evolving AI technologies. Together, this framework and the discussed strategies offer great value to forward-looking disinformation management efforts. Subsequent research can build upon this framework as AI technologies are deployed in disinformation campaigns, and practitioners can leverage this framework in the development of counter-disinformation efforts."

Yvonne Wade Sanchez

Rhetoric

Genres: Expert genres, non-specialist audiences, and misinformation in the artificial intelligence age

Mehlenbacher, B., Balbon, A. P., & Mehlenbacher, A. R. (2024). *Journal of Technical Writing and Communication*. https://doi.org/10.1177/00472816231226249

"Drawing on rhetorical genre studies, [the authors] explore research article abstracts created by generative artificial intelligence (AI). These synthetic genres—genre-ing activities shaped by the recursive nature of language learning models in AI-driven text generation—are of interest as they could influence informational quality, leading to various forms of disordered information such as misinformation. [The authors] conduct a two-part study generating abstracts about (a) genre scholarship and (b) polarized topics subject to misinformation. [The authors] conclude with considerations about this speculative domain of AI text generation and dis/

misinformation spread and how genre approaches may be instructive in its identification."

Anita Ford

Scientific writing

Reddit and engaged science communication online: An examination of Reddit's R/Science Ask-Me-Anythings and Science Discussion Series

Moriarty, D. & Mehlenbacher, A. (2024). *Technical Communication Quarterly*, *33*, 54–70, https://doi.org/10.1080/10572252.2023.2194676

"Studies of emergent online science communication genres continuously seek to understand novel forms of popularizations aimed at facilitating expert-with-public engagement. To understand how scientists can successfully engage with audiences in dynamic online environments, we examine Reddit's science subreddit, attending to the acclaimed Ask-Me-Anything (AMA) series, and subsequent Science Discussion Series (SDS). A move analysis on a corpus of AMA and SDS original posts reveal moves used when engaging audiences through these installments."

Rhonda Stanton

Social Justice

Trying creative problem-solving to social justice work in technical and professional communication

Sarraf, K. S. (2024). *Technical Communication Quarterly*, *33*, 90–101, https://doi.org/10.1080/10572252.2023.2194340

"Problem-solving is central to technical and professional communication (TPC), but problem-solving's economic roots may not align with social justice. This article introduces socially just creativity: the ability to generate new or unique and effective ideas in conjunction with other members of a community to challenge unjust

status quos and tackle wicked social justice problems. The article uses a case study to illustrate that conception. It concludes with recommendations for TPC practitioners to enact social justice creativity."

Rhonda Stanton

Social Media

"Doesn't really answer my question . . .": Exploring customer service interactions on Twitter

Lutzky, U. (2024). *International Journal of Business Communication*, *61*, 92-114. https://doi.org/10.1177/23294884231200247

"This article explores customer service interactions between the Irish airline Ryanair and its passengers on the social networking platform Twitter. Using a corpus linguistic methodology, it investigates a 1-million-word corpus of Twitter threads comprising tweets addressed to and posted by Ryanair between August 2018 and July 2019. Studying the communicative strategies used in the corpus reveals customers' main concerns and causes for complaint, and how the airline addresses these in their response tweets offering assistance to passengers. In addition, the analysis of customer response tweets to these corporate replies allows insights into customers' reactions to and perception of the (often generic) answers they receive. The aim of this case study is to gain further understanding of the linguistic and communicative features that characterize customer service interactions online, and the attitudes customers voice toward them, with a view to streamlining customer communication and improving levels of customer satisfaction."

Katherine Wertz

Teaching

Lessons of experience: Labor habits of a long-tie, contingent online technical communication instructor

Love, P. (2024). *Technical Communication Quarterly*, *33*, 71–89, https://doi.org/10.1080/10572252.2023.2199791

"The COVID-19 pandemic made nearly every teacher and student online teachers and students in some capacity. This article presents a case study of an experienced, contingent technical and professional communication (TPC) instructor showing how she sets up, presents, and, most importantly, labors in her course for the benefit of her students and herself. This article ends with recommendations for other online TPC teachers and program administrators to support online TPC courses."

Rhonda Stanton

Technology

Artificial intelligence prompt engineering as a new digital competence: Analysis of generative AI technologies such as ChatGPT

Korzynski, P., Mazurek, G., Krzypkowska, P., & Kurasinski, A. (2023). *Entrepreneurial Business and Economics Review*, *11*(3), 25-37 https://doi.org/10.15678/EBER.2023.110302

"Objective: The article aims to offer a thorough examination and comprehension of the challenges and prospects connected with artificial intelligence (AI) prompt engineering. Our research aimed to create a theoretical framework that would highlight optimal approaches in the field of AI prompt engineering. Research Design & Methods: This research utilized a narrative and critical literature review and established a conceptual framework derived from existing literature taking into account both academic and practitioner sources. This article should be regarded as a conceptual work that emphasizes the best practices in the domain of AI prompt engineering. Findings: Based on the conducted deep and extensive query of academic

and practitioner literature on the subject, as well as professional press and Internet portals, we identified various insights for effective Al prompt engineering. We provide specific prompting strategies. Implications & Recommendations: The study revealed the profound implications of Al prompt engineering across various domains such as entrepreneurship, art, science, and healthcare. We demonstrated how the effective crafting of prompts can significantly enhance the performance of large language models (LLMs), generating more accurate and contextually relevant results. Our findings offer valuable insights for Al practitioners, researchers, educators, and organizations integrating Al into their operations, emphasizing the need to invest time and resources in prompt engineering. Moreover, we contributed the Al PROMPT framework to the field, providing clear and actionable guidelines for text-to-text prompt engineering. Contribution & Value Added: The value of this study lies in its comprehensive exploration of Al prompt engineering as a digital competence. By building upon existing research and prior literature, this study aimed to provide a deeper understanding of the intricacies involved in Al prompt engineering and its role as a digital competence."

Yvonne Wade Sanchez

The communication coefficient method: A new faculty grading tool designed to help engineering students improve their technical communication

Londner, E., Dabkowski, M., Kloo, I., & Caddell, J. D. (2023). *IEEE Transactions on Professional Communication*, *66*(2), 202–219. https://doi.org/10.1109/TPC.2023.3260479

"**. . . .**This article examines the communication coefficient (CC), a new method for grading student technical communication. . . . The core philosophy of the CC method is that audiences perceive technical work more positively when it is communicated well and more negatively when it is not. The method captures this philosophy mathematically: students' grades result from multiplying the points earned for technical content by a number—the coefficient—representing how well they communicated that content. . . . The CC method was employed in three undergraduate engineering classes at the United States Military Academy during the spring 2020 semester. Student and

instructor feedback were collected to gauge the pros and cons of the method and whether it is worth fielding on a larger scale. . . . The CC method was found to encourage better student communication, although mixed student and instructor opinion suggest that changes to the method and the way that it is messaged are necessary." The authors conclude this grading method deserves further study, including in additional academic disciplines.

Lyn Gattis

Usability studies

Perspectives on usability testing with IoT devices in technical communication courses

Wright, D. (2024). *Technical Communication Quarterly*, *33*, 38–53, https://doi.org/10.1080/10572252.2023.2194345

"This article offers perspectives on adopting smart home technology into usability testing for technical and professional communication (TPC) courses. Usability is a valued skill for technical communicators. However, usability testing methods have their problems as pedagogical tools. Internet-of-Things (IoT) devices and Smart Home Technology (SHT) may offer instructors tools to overcome some of those problems. This article details advantages and concerns associated with using SHT for curricular usability testing."

Rhonda Stanton

User experience

Efficiently engaging: Toward an expansive view of time on task

Williams, L. H. (2023). *Journal of User Experience*, *18*(4), 200–209. [doi: none]

"When it comes to website engagement, the metric time on task is often perceived as being negatively correlated with success factors like the likelihood of

purchase and satisfaction. This is because it is seen as a proxy for the amount of effort a user exerts to complete a given task. However, through the analysis of 128 unmoderated remote usability tests, [the author] found that users often spend longer amounts of time completing a task on a website when they found the content and format of the website to be personally meaningful, engaging, and surprising. In this scenario, rather than representing effort, time on task better captures engagement and discovery. The inverse of this scenario—when users spend a short amount of time on a website—also reveals that short times sometimes occur due to frustration, or a perceived lack of brand mission and purpose, rather than the ease of use of the website." On the basis of these findings, the author argues for "a more expansive view of time on task that positions it as a catalyst for further analysis based on observed deviations for expected duration. The practical implications of this are that websites should be designed to foster both clarity and engagement, optimizing for time spent on task rather than simply aiming to reduce it, due to the myriad ways in which time spent on a website can be emotionally experienced by users."

Lyn Gattis

Online user reviews: A treasure trove of UX research?

Hwang, W. (2023). *Journal of User Experience, 18*(4), 170–174. [doi: none]

". . . . Online user reviews, which can be relatively easily obtained from real users, offer a wealth of UX data and are undoubtedly appealing. However, as big data containing UX content, caution must be exercised when extracting meaningful insights for scientific research. From a traditional perspective of scientific research methods, online user reviews are qualitative data composed of text, necessitating appropriate analysis methods such as content analysis. However, given that they are big data obtained from thousands or even millions of users, big data analysis methods should also be employed. Additionally, online user reviews are not pre-planned data but rather accumulations of unplanned data, which introduces additional considerations during the analysis and conclusion-drawing process." This essay examines challenges and factors in utilizing online user reviews in UX research, along with "the characteristics of

data collection methods and the pros and cons of online user reviews in UX data."

Lyn Gattis

Writing

Editors' perceptions of singular they

Mackiewicz, J. & Durazzi, A. (2024). *Technical Communication Quarterly, 33*, 1–18, https://doi.org/10.1080/10572252.2023.2184499

"We surveyed 80 editors about their perceptions of singular they in five sentences. We asked editors to choose among three responses: maintain, query, or edit. We also examined whether editors' responses differed according to age group. Editors most often said they would maintain they not only with an indefinite antecedent but also definite and nonspecific antecedents. Editors would query they when used with proper names to verify that they was the accurate pronoun."

Rhonda Stanton

Engineering students' writing perceptions impact their conceptual learning

Wilson-Fetrow, M., Svihla, V., Chi, E., Hubka, C., & Chen, Y. (2023). *IEEE Transactions on Professional Communication, 66*(2), 186–201. https://doi.org/10.1109/TPC.2023.3251159

This study explored the research questions of whether student beliefs [about writing]—expressed in reflections—depict writing as a learning process or as a deterministic artifact" and the extent to which "these expressed beliefs explain variance in their conceptual learning in a chemical engineering laboratory course. . . . A design-based research study was conducted in three semesters of an upper division chemical engineering laboratory course to jointly study the use of feedback, revision, and reflection, and to develop contextualized theory about the relationships between these and students' conceptual learning. Students' writing was analyzed qualitatively. Regression modelling explained variance in scores of students' conceptual understanding." The researchers "found that students who elaborated on errors and corrections scored

significantly lower on conceptual understanding in their final submission, while students who described writing as an ongoing process scored significantly higher on conceptual understanding in their final reports. [The authors] found a similar trend for students who completed a second cycle, and especially that a focus on perfecting a written artifact corresponded to lesser gains." The authors suggest that instructional support for engineering student writers could involve approaching writing **"as a developmental and learning process and. . . engaging them in multiple rounds of feedback, revision, and reflection across their programs of study."

Lyn Gattis